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CHRONIC SEPSIS AS A CAUSE OF MENTAL DISORDER.

I.—RELATION OF FOCAL SEPSIS TO MENTAL DISEASE.*

BY

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THE part played by sepsis in producing nervous and mental disorders of all degrees of severity, and the degree to which these can be prevented, checked, or controlled by antisepsis are singularly opportune subjects for discussion on an occasion marking the centenary of the birth of Lister. We are not only commemorating past achievement, but inaugurating a new campaign against sepsis in one of the greatest domains of medical diseases—that which bears the ill-omened title of insanity.

It is the first time this subject of sepsis and antisepsis in relation to mental disorders has been before this Association. The types of mental disorders more especially concerned are those that bear the titles of dementia praecox, manic-depressive insanity, paranoid conditions, psychoneurosis, and toxic insanities. These constitute the great proportion of the admissions into our mental hospitals—on an estimate kindly supplied me by our President: dementia praecox about 20 per cent., manic-depressive insanity about 50 per cent., paranoid conditions about 10 per cent., psychoneurosis about 5 per cent., and toxic insanities about 15 per cent.

The sepsis with which medicine is concerned is that originally described by me in 1900 under the title of "oral sepsis," and other forms of focal sepsis as a cause of medical diseases—namely, the sepsis in teeth, the tonsils, nasopharynx, nasal sinuses, stomach, intestine, colon, and sometimes elsewhere in the genito-urinary tract: "oral sepsis," "tonsillar sepsis," "nasal sepsis," "septic gastritis," "septic enteritis," "septic colitis," as I then termed the several conditions.

The call I then made (1900) on behalf of this sepsis was that:

> "Sepsis in medicine is playing a greater part in producing medical diseases than it is now doing in surgical affections. A great field of prevention is opened up by the exercise especially of oral antisepsis against oral sepsis, the worst and parent source of most other forms of focal sepsis, especially that in the tonsils, stomach, intestine, and colon—a field that can be worked in with the most surprisingly satisfactory results by the doctor, the surgeon, the throat, nose, ear, and eye specialist, and, most of all, the dental surgeon."

This call included a special appeal for attention to this sepsis in the realm of nervous disorders as presented in ordinary general practice, its neuritis, its neurasthenias, its mental depressions, or its more severe so-called "nervous attacks" or "nervous breakdowns."

One of the conditions I specially called attention to I termed "toxic neuritis." Cases of this kind "open up a new field of inquiry" as regards the possible role of oral sepsis in causing nervous effects such as those I described under the title of "toxic neuritis" (1900).

Now, after twenty years, I am glad to think that the response to that call has come at last. It has come first of all (1919-23) from the American side at the hands of Dr. Cotton, the director of the New Jersey State Hospital, Trenton, who four years ago (1923) set forth very fully his results before the Royal Medico-Psychological Society at its annual meeting, as fully detailed in the *Journal of Mental Science*, October, 1923. Dissatisfied after some fifteen years' experience of mental work with the results obtained, he began from 1918 onwards a desperate frontal attack with horse, foot, and artillery—namely, medical recognition of the importance of oral and focal sepsis, surgical help for its removal, and bacteriological support for both—on the whole field of the sepsis presented by his cases (1,400 in number), in the teeth, the tonsils, nasal sinuses, stomach, intestine and colon, and the genito-urinary tract, with the result of doubling the number of his discharges, and reducing the average stay in hospital from ten months to three months.

Since then the subject has received steadily increasing attention at the hands of English psychiatrist physicians, and has been before them at three of their annual meetings as a subject of great interest and increasing importance in the treatment of the insane.

As might be expected, the very force of this attack on the problem of sepsis in mental diseases has produced equally strong counter-attacks, chiefly at the hands of American psychiatrists—especially the studies by Kopeloff, Kirby, and Cheney (1922-23) of the New York State Psychiatric Institute. But the net result has been the satisfactory one that, however much they may agree that no importance is to be attached to focal sepsis as a cause of mental disorder, they are all "whole-heartedly in favour of eliminating all focal infection in psychotic patients." That is a great advance on what has hitherto obtained—to wit, that no attention has been paid to it. There the matter at present stands—there is an advance all round.

SEPSIS IN MEDICINE.

If on the present occasion the President and officers of this Section have kindly invited general physicians and surgeons to take part in this discussion, it is owing to the circumstance that the past twenty-five years have furnished a large experience as to the part played by sepsis in general diseases other than nervous or mental, an experience now available in relation to the whole subject of mental disorders. The result of that experience may be best described in the words of others, since it was first set forth by me before this Association at its Oxford meeting in 1904, and since so fully confirmed by many others, especially William Willcox and Chalmers Watson in this country; Frank Billings, Llewelys Barker, and Charles Mayo in America.

> One of the great advances in medicine of the past twenty years. . . . The effects of oral sepsis have been worked out, and prove to be so widespread, so multiple, and frequently so grave as to make us ashamed of our previous blindness to a common source of blood infection staring us in the face all those years. . . . An addition to our knowledge of the first magnitude.—Dr. Mitchell Bruce, Address in Medicine, British Medical Association, 1910.
>
> No one circumstance in the last fifteen years that has so changed the aspect of the practice of medicine as the doctrine of focal sepsis.—Professor Thayer, Johns Hopkins University, 1914.
>
> The most interesting chapter in modern medical history, profoundly affecting medical and dental practice, epoch-making in its effects.—American dental literature.
>
> A profound and permanent influence on general medicine, rendering Lister's hypothesis which governs the practice of surgery at least of equal importance in relation to medicine. Infection in medicine is responsible for a vast number of diseases—a fact that has received far less attention than it ought to have had. . . . The immediate ravages of oral sepsis may prove serious enough, but the remote complications, seemingly so unrelated to their true cause, are a grave menace both to health and life.—Sir Berkeley Moynihan, 1927.

These appraisements may serve to indicate at once the chief site (the teeth), the apparently negligible character, but nevertheless the actual supreme importance of the foci of sepsis with which medicine as distinct from surgery is specially concerned; with which also, however, the surgeon has learnt to be equally concerned as a great potential and actual source of much of the septic infection in his surgical cases.

The sepsis with which the surgeon has been concerned is something obvious, manifested by recognizable effects such as inflammation, suppuration, death of tissue, fever, and septicaemia—common effects producible by a large range of organisms, but chiefly those of the staphylococcal and streptococcal groups, or, in the case of the alimentary tract, the *B. coli* group. But he is not specially interested in the character of the organisms; his whole concern is that no organisms of any kind invade his wounds in the course of his operations.

But the features of the sepsis operating in medicine are of a different and more complex character. Its foci are small, hidden, chronic, and cause generally no local effects

* The opening paper to a discussion in the Section of Mental Diseases at the Annual Meeting of the British Medical Association, Edinburgh, 1927.

drawing attention to themselves. The organisms concerned are mostly of the same character, but the predominant one is the streptococcus. These are not of one, but of many strains—sixteen or more. Their characters are represented not by their cultural features or by their behaviour towards sugars, but by the different effects they produce in the different systems or tissues of the body—in short, by their selective action on the different systems of the body.

Rosenow (1914-16) has obtained remarkable results in this relation. Strains isolated from the mouth and tonsils of patients suffering from particular diseases—rheumatism, myalgia, arthritis, nervous diseases, such as paralysis—were found to have a remarkable specificity in their action: those from rheumatic cases producing arthritis deformans, arthritis, and myositis; those from ulcers of the stomach showing a marked affinity for the mucous membrane of the stomach and duodenum; those from the gall bladder producing cholecystitis in the animals into which they were injected. Most interesting of all was the specificity and selective action of strains isolated from the mouth and tonsils in various nervous diseases, such strains being always recovered with special frequency from the class of nervous tissue affected by the disease.

These studies of Rosenow, confirmed by others, appear to have all the elements of a romance in revealing this extraordinary elective specificity in the action of different strains of streptococci. But the results are only in accord with the actual clinical facts observed in disease—namely, the extraordinary variety of ill effects associated with conditions of oral sepsis and other forms of focal sepsis, and the equally remarkable effect which the removal of such foci has in arresting, controlling, or entirely banishing the ill effects presented in the case.

Among the chief and most common of such ill effects are the neurotoxic effects of sepsis presented in mental disorders, as illustrations of which I now describe the two following cases:

Sepsis in Mental Disorders.

"*Septic Psychosis.*"

Just as my whole original thesis of oral sepsis as a cause of disease arose out of the study and record of one single case of pernicious anaemia in 1890, and was driven home by the description of one case of "septic gastritis" (1900), so now, in the case of mental disorders and their relation to oral and focal sepsis, the relation may best be illustrated by the following case recorded by Dr. Cotton.

A single woman, aged 55; father died of melancholia aged 64, mother of paralysis at 80.

Her mental trouble followed the death of her mother in August, 1916; she became excited, talkative, and in September was much depressed, agitated, and self-accusatory.

Admitted into hospital in October, 1916. It was noted at the time that her upper teeth were missing, and that her lower teeth were badly decayed. But nothing was done for her, and she was transferred to the chronic ward, where she remained for nearly two years till 1918.

In September, 1918, eleven bad teeth were extracted. She improved rapidly during the next few weeks.

On November 9th, 1918, she was discharged as recovered and has remained perfectly well ever since.

In this case, as Dr. Cotton points out, the neglect to remove the bad septic teeth on admission, although their presence was noted, was responsible for her residence of two years in the hospital, for there seemed to be no other infection or any other physical disturbance except the infected teeth. As he also comments, the hereditary taint in the patient's history (father dying of melancholia at the age of 64) did not affect the recovery of the patient. Lastly, and most interesting of all, she recovered, and was fit to be discharged within a month from the time of the removal of her infected teeth.

By itself this case might be regarded as an exceptional one in which by coincidence recovery happened to follow in a few weeks the removal of some septic teeth. But taken in conjunction with the evidence given above as to the part taken by similar sepsis in producing all sorts of medical ailments and conditions, such as anaemia, rheumatism, etc., a case of this kind would alone, in my opinion, serve to arrest the attention of everyone concerned with mental disorders. The case may be regarded as of definite historical interest: in the date of its first admission into hospital (1916), when, as Dr. Cotton describes, his interest in oral sepsis and its possible effects had not been aroused; his observations of the septic condition of the teeth without any action on his part to remove them (the state of matters which in more or less degree has obtained in all mental hospitals up to this time); the action he took two years later (in 1918), when his interest in the importance of sepsis and its removal was thoroughly aroused; and lastly, the remarkable and immediate recovery that followed in a few weeks' time.

All the usual etiological factors to which importance is attached in mental disorders were present in the case; the death of the patient's father from melancholia (the *heredity factor*); the onset of her trouble after the death of her mother (the *psychogenic factor*, to which from the point of view of psychology it has hitherto been customary to attach an almost exclusive importance in explaining mental disorders). Each of these factors might be regarded, singly or combined, as accounting for the patient's mental breakdown. Neither of them could be altered by any measure of treatment, and two years of hospital treatment in the best surroundings had failed to alter the psychology of the case. Nevertheless, what all other measures failed to effect was effected in a few weeks' time by the removal of what might well seem to be the most unimportant and most uninteresting feature of her trouble—the removal of eleven septic teeth.

In reality the factor producing her mental trouble was not her hereditary history, nor yet the mental anxiety following the death of her mother, both of which might in some degree predispose her to some mental instability, but the presence and toxic action of a severe and apparently negligible septic infection arising from septic teeth. On removal of these the whole mental cloud was lifted from her. Her psychosis was, in short, a "septic psychosis," as I would now term it. Fortunately in her case these seem to have been the only septic foci present. If other septic foci had been present in the tonsils or nasal sinuses, or in the ears, or in the stomach, intestines, or colon, or cervix, as is often the case, her recovery might well have been neither so sudden nor so permanent. Each of these would have called for removal, or for appropriate measures of treatment as far as possible.

Another case from the same source, but from a later period (1921), illustrates the result of recognizing and removing all septic foci immediately on admission.

A girl, aged 17, admitted March 21st, 1921. Paternal cousin insane (hereditary factor). Onset of trouble one month before admission, ostensible cause given being a love affair (psychogenic factor).

Mental Features.—Violent, excited, destructive, breaking windows and furniture. On admission markedly dishevelled in appearance, irrelevant, and volunteered the information that her teeth hurt her. Teeth and gums in bad condition and tonsils also infected.

For a month after admission she continued in an excited condition, destructive to furniture, loud, noisy, and very impulsive, untidy, paying no attention to herself, passing excretions unnoticed into the bed; conversation irrelevant and much confused; hallucinations of sight; refused food, had to be fed, and to be secluded in a single private room, so excited and non-co-operative that *x*-ray photographs could not be taken of her teeth.

Nine days after admission (March 30th) her tonsils were removed, without any effect on the mental condition. On April 19th, about a month after admission, the resident dentist diagnosed impacted third molars, and the four were extracted under a general anaesthetic. She slept well, and next morning asked the dental surgeon to come in and see her. This was the first relevant observation she had made since she had come into the hospital. On the same day she asked for permission to go to the bathroom and look after herself. There was a marked change in her conduct, her conversation became quiet and fairly relevant. On May 9th she voluntarily made the remark that "since the extraction of my back teeth I have felt entirely different," and she realized that from that time her improvement continued.

On May 16th she was able to give a very clear account of herself. Her mental state at this date showed no evidence of confusion; her memory was good for recent and remote events, except for the first three weeks of her residence in hospital; sight and judgement were perfect; she realized that she had had a serious mental attack.

She was discharged on June 21st, three months after admission, although she had practically recovered after her impacted teeth and infected molars were extracted, one month after admission.

This case illustrates, according to its recorder, the effect of impacted third molars in producing these confused

Table showing Incidence and Sites of Focal Sepsis treated successfully in 100 Male and 100 Female Patients. (Dr. Cotton.)

Mental Disorder.	Total.		Teeth.		Tonsils.		Gastric.		Vaccine.		Vesiculotomy.	Cervix.	Colon.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Manic-depressive insanity	49	66	49	66	39	47	41	50	41	46	1	8	—	9
Dementia praecox ...	18	8	18	8	13	7	13	7	13	7	—	5	—	2
Paranoid condition ...	15	9	15	9	11	6	14	5	14	5	—	1	1	1
Psycho-neurosis	7	10	7	10	7	6	6	7	6	6	1	2	—	—
Toxic psychosis	11	7	11	7	6	7	9	7	10	7	—	4	—	1
Totals	100	100	100	100	76	73	83	76	84	71	2	20	1	13

mental states which so closedly resemble dementia praecox. For such teeth are always, in his experience, found to be infected. It shows how the removal of some particular focus of infection, such as the tonsils in this case, may fail to improve the mental condition, and the necessity in such an eventuality for seeking for other possible foci—in this case the impacted teeth. It also indicates the difficulties presented to the full investigation of patients owing to their excited state, and their refusal to allow any examination of their mouths or throats, radiographically or otherwise.

The problem is whether to wait for weeks, possibly months, till the violence of the mental symptoms subsides or lessens; or, on the other hand, to face what appears to be the risks, and carry out operations such as dental extractions while the patient is still violent.

Every case of this kind must be considered on its own peculiar features of urgency and severity. It is a matter which specially requires the judgement of the physician in charge of the case. I may give my own experience that any such apparent risks can be safely run.

The existence and possible importance of impacted and unerupted teeth in mental cases, here noted by Dr. Cotton, are, in my judgement, observations of interest in revealing the earlier dental history of such cases. Thus in 120 cases recorded by Kopeloff and his fellow workers (1923) I find that as many as 15 cases (or 1 in 8) showed such teeth to the number of no fewer than 49, an average of 3 such teeth to each case. If these teeth become infected, as in cases of long-standing and severe sepsis they are most likely to be, the neurotoxic action of such sepsis enclosed in the alveolus of the jaws is likely to be very severe, as in the case above recorded.

The existence of such teeth in 1 in 8 cases of dementia praecox and manic-depressive insanity emphasizes, in my opinion, the importance of the earlier dental history of all cases of this character, especially in young people and young adolescents. I have had cases in which I have been able to trace back a continual history of severe dental infection from the time of dentition at the age of 2 onwards.

In my judgement the dental history and the high degree of sepsis present in the last mentioned case would probably be found, if fully investigated, to represent approximately the dental history and degrees of sepsis of most cases of the severe and prognostically grave mental disorders affecting juveniles or young adolescents. I draw special attention to the matter as one worthy of investigation and inquiry in every case of this character.

If, as I am satisfied from my own clinical experience as a physician is the case, this widespread septic infection is also in particular instances causing diffused and various psychotic effects, the title from now onwards that would, in my judgement, best connote this form of psychosis would be the one I would now suggest of "septic psychosis."

This commonest form of psychosis, produced by long-standing chronic septic infection, exists sometimes alone, but more frequently along with and complicating other forms of psychosis, intensifying and aggravating the more special mental features belonging to these latter psychoses. The extent to which it is present in any case can only be determined by removing it, and the best hope that any psychotic patient can have about his trouble is that it may prove to be largely, or possibly entirely, of the nature of a septic psychosis, and therefore one which may possibly be removed by removal of the septic foci underlying it.

As regards the possible importance of this "septic psychosis" in psychiatry, perhaps the most judicious opinion is that pronounced by Dr. Adolf Meyer, professor of psychiatry in the Johns Hopkins University.

The evaluation of focal infections is an outstanding contribution of twentieth century medicine. If means could be made available to remove such focal infections in all mental cases, psychiatrists would make another large contribution of importance far beyond its own special sphere of mental hygiene, and relieve a group of patients of one of the insidious sapping influences taxing humanity, thus offering a free field to work with the many other features which are bound to play a part. In dealing with it I would only make one plea. Do not let it go forth that sepsis is the cause of all insanity, for that is the sort of statement that always puts the clock back. Let us be content to know on evidence that a new era has been opened up for the prevention or cure of many cases of mental disorder, by surgical attention to septic conditions.

Incidence and Sites of Focal Sepsis.

The incidence and sites of the focal sepsis found in mental disorders are well brought out in the above table of 200 cases treated successfully by Dr. Cotton, and found afterwards on visit to have remained well.

In his experience in the case of men the teeth were found infected in all cases, and in every form of psychosis, the tonsils in 76 per cent. of cases, the stomach in 83 per cent. (all of them requiring treatment with vaccines), the seminal vesicles in 2 per cent., and serious lesions of the colon in 10 per cent. In the case of women, the teeth were found septic in all cases, the tonsils in 73 per cent., the stomach in 76 per cent. (requiring treatment with vaccines in 71 per cent.), the cervix in 80 per cent., and serious lesions of the colon in about 30 per cent.

As regards the incidence in different forms of psychosis there was little or no difference between them in males, but in women the colon was operated on in 13 per cent. of cases, as compared with only 1 per cent. in males, 9 of the cases being among 66 cases of manic-depressive insanity.

Interesting data regarding the incidence and seats of focal sepsis are also supplied by Dr. Graves, the director of Rubery Hill and Hollymoor Mental Hospitals of the Birmingham Corporation, the first of the hospitals in this country to supply data of this character.

No. of Cases.	Teeth.	Tonsils.	Nose.	Ear.	Cervix.
296	230	—	—	—	—
258	193	—	—	—	—
123	—	48	18	39	—
249	—	104	20	106	—
139	—	—	—	—	99

These figures yield the following incidence of septic foci in different seats:

Oral sepsis	76 per cent.
Tonsillar sepsis	40 ,,
Nasal sinusitis	10 ,,
Ear	39 ,,
Cervix uteri	71 ,,

The figures show the widespread character of the sepsis present in the mental patient.

The percentage incidences for the teeth and tonsils (76 and 40) are considerably lower than those found by Dr. Cotton (100 and 76) respectively; but they are interesting in confirming the high incidence of cervix infection—namely, in 71 per cent. of women. They draw attention to the incidence of nasal sinusitis in at least 10 per cent. of cases, but most of all to the high incidence of ear sepsis in 39 per cent. of cases.

The relative importance of the various seats of focal sepsis, I would point out, is not dependent on the relative incidence of such infection in the various seats—teeth, tonsils, nose, cervix, etc.; it is determined far more by the amount of sepsis which may be harboured in each seat, and by the conditions favouring its chronicity and by its virulence. In this relation oral sepsis (dental sepsis) is by far the most important, for the number of foci which the teeth may harbour depends not only on the number of septic teeth which may be present, but also on the number of septic sockets connected with these teeth. Thus the presence of four septic molars each with three roots means the existence of twelve septic foci, and may thus be the equivalent of eight incisors and four canines which have only one root each.

I have been much impressed by the degree of infection in the sockets of infected teeth in many cases; cultures which I myself have taken with extremest precautions from the apices of the teeth immediately on their withdrawal, and planted on sloped agar tubes, growing hundreds of colonies of streptococci sometimes in almost pure culture (90 per cent).

The degree of oral sepsis cannot be expressed in terms of "infected teeth" as some observers do (Kopeloff, 1923). It must have regard to all the other conditions present—of septic gingivitis, tartar deposit, ulceration and pocketing, pyorrhoea; of periodontitis and osteitis shown by recession of gums or looseness of teeth, or by thickening of alveolar margins; number of carious or necrosed teeth; number of devitalized teeth (nerves destroyed); number of teeth with gold caps or porcelain crowns, gold bridges (a very potent form of sepsis, especially in regard to its neurotoxic effects); and finally, to conditions revealed by radiographs of apical abscesses and granulomata, of buried roots, of impacted or unerupted teeth.

When regard is had to all these conditions, the ordinary degrees of oral sepsis usually found—slight, moderate, or severe (1°, 2°, 3°), as I am accustomed to designate them—will often, in my experience, be found to be so severe (especially in mental cases) that it can only be expressed by degrees varying from 5° up to 10°.

The amount of infection created by all these various conditions is far greater than anything ever found in connexion with infected tonsils; and also far more virulent, since it is all in connexion with bone tissue, which always enhances the virulence of a septic infection.

It is this latter circumstance that adds to the virulence of nasal sinusitis and ear infection, which also can be very severe in mental cases.

New Era of Antisepsis in Mental Disorders.

In the foregoing I have endeavoured to give a glimpse of the character of this subject of sepsis in relation to mental disorders, from the point of view of a general physician well acquainted with the characters and potentialities of the sepsis concerned—rather than from that of the psychiatrist physician to whom many other questions of interest arise.

The same applies to matters of surgical interest arising out of this new aspect of mental disorders: the work required from the dental surgeon, from the radiographer, from the throat, nose, and ear surgeon, from the abdominal surgeon in connexion with the surgery of the intestine and colon, from the genito-urinary surgeon in connexion with the prostate and seminal vesicles, and lastly from the gynaecological surgeon. I see no reason why the help of the surgeon in dealing with conditions of sepsis presented in mental patients should not be warmly welcomed, in the hope of restoring sanity to a disordered mind, just as readily as it is placed at the disposal of any other who by some accident might require such help.

Discovery of the part played by sepsis in mental disorders introduces an entirely new era into the whole subject of the nature of many of these disorders, and the possibility of controlling and preventing them. They make clear, in my judgement, that it is septic infection that underlies many mental disorders hitherto regarded as denoting or foreshadowing permanent damage, or contributes to the severity of such disorders even when permanent damage has been done.

This "septic psychosis"—as I would now term it—is produced by the action of toxins derived from small and apparently insignificant septic foci, chiefly in the teeth and tonsils and elsewhere. On the removal of these the whole mental disorder may be profoundly affected, and may in many cases be made to disappear. By the removal of such septic foci with the attendant septic psychosis the control of mental disorder and insanity in many of its forms and manifestations is rendered possible to a degree never before attainable. The degree of disorder may be of such a character and duration—for example, that presented in dementia praecox, or in severe manic-depressive insanity—as to suggest permanent damage to the higher brain centres, and to appear, therefore, incapable of being influenced by the removal of slight septic foci. But the clinical facts show that this is not the case, and the extent to which the degree of sepsis present in each case is affecting the character and degree of the mental features of the case in causing a "septic psychosis" can only be determined by the removal of that sepsis.

The removal of the sepsis in all cases of mental disorder and insanity is therefore called for as a matter of urgency and as a first measure of treatment in every case. The amount of chronic sepsis present among the mental patients who to the number of 133,000 and more occupy the mental hospitals and asylums of this country is far greater than that to be found in any other group of inmates of our hospitals. The removal of that sepsis in their case is imperative to a degree, as the first and most important measure of treatment applied to them. For in their case the evidence already available makes it clear that however much ordinary people in health may be able to resist, and do successfully resist, the deleterious action of the varying degrees of similar sepsis which they carry, the sufferer from mental disorder *cannot afford to have any such sepsis unregarded*. He is playing for the highest stakes—the preservation of his brain power and his sanity. He can run no risks. And inasmuch as in his case the control of his illness is out of his hands, it is all the more incumbent that every possible measure of treatment should be available and should be applied for his benefit.

Each mental hospital should therefore be as fully and as well equipped for surgical work as it has hitherto been for medical or nursing care. Its staff should include both resident and visiting surgeons concerned with dental, throat, nose, and ear, abdominal, and gynaecological surgery. This involves the provision of a fully equipped dental department and surgical theatre for every mental hospital, with a resident dental surgeon and anaesthetist, and a visiting staff of a general surgeon, and throat, nose, and ear specialists, with the necessary radiographic and bacteriological departments. In making this provision all public authorities will, I feel sure, have the whole-hearted support of the public, rightly concerned for their mentally afflicted more than for any other class of sufferers.

The possible standard of increased relief which sufferers of this class may receive is that their chances of recovery may be doubled, that the duration of their stay in hospital may be materially reduced, and that on discharge their chances of remaining well, both physically and mentally, will be greatly improved by the removal of the sepsis which they previously carried, if that *removal is carried out at the first onset of the trouble before permanent damage is done.*

But it is in the realm of prevention that this new application of antisepsis will find its greatest triumphs—namely, the cutting short of all sorts and degrees of nervous and mental disturbances that in most cases precede and herald the onset of the graver mental disorders.

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II.—RELATION OF ABERRANT MENTAL STATES TO ORGANIC DISEASE.

BY

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In the month of April we celebrated the centenary of Lister, and in a week of devotion to his illustrious memory we recalled the incomparable services rendered by him to the cause of humanity. We heard once again from the lips of men representing all the civilized countries, each of them a spokesman of high distinction, that Lister by his researches had changed the whole scope and practice of surgery. So long as men shall live and suffer, to be rescued from their suffering by the art of the surgeon, so long must the hand of Lister be there to heal them; for the principles laid down by the master are eternal.

Among the multitude of voices which bore eloquent testimony to the immortal labours of Lister, there was one only which witnessed to the truth that the scope of his doctrine spread beyond the bounds of surgery, and must be held to include the whole province of medicine, including research.

The bent of Lister's mind towards biology was soon observed. Many of his early experiments seemed to have little direct bearing upon the craft of the surgeon. Yet he had derived from John Hunter the belief that the beginning of surgery is a knowledge of inflammation; and in studying this process he was making his mind ready for the new observations and deductions which Pasteur was soon to make plain to the world. Pasteur's work had been published some years before, and had been accessible to all. When Lister was handed Pasteur's original paper by the professor of chemistry at Glasgow he alone of all who read it was able to realize at once the direct relevance of this new doctrine, derided and denied by high authority, to the science and practice of surgery. It is as clear an illustration as was ever given of the need which lies upon us all to keep our minds open to new truths, expectant of them, competent to test and to apply them. Such truths may be born, will, in fact, in the near future almost certainly be born, in the minds of those not directly engaged in the service of surgery.

We speak of Lister's work in its relation to surgery, and rightly attribute to him the almost incredible changes which have come over our own art. But the eternal principles established by Lister have an effect upon all branches of medicine. And it may truthfully be claimed that the adventures of the surgeon have confirmed and illustrated the truth which we owe to William Hunter alone—that infection plays a large part, often indeed the chief or the only part, in the inauguration of many of the diseases still within the province of the physician or the alienist. The thesis developed by him in a series of papers which display both remarkable originality of thought and careful and patient observation, concerns the part played by slight and continuously overlooked forms of sepsis in causing distant and apparently unconnected disorders, often serious and disabling, and not seldom, in their full career, the cause of death. For over twenty years William Hunter pursued his way and preached his doctrine, unregarded, discredited, or denied. For years he was a voice crying in the wilderness. There was once a voice crying in the wilderness which changed the face of the world, and built the world anew on foundations which can never be shaken. William Hunter's contribution to direct research is, in my judgement, the most significant of any conducted in the last generation. Of the truth of his teaching there is not the slightest doubt. Thanks to him we recognize now the grave importance, the causal significance of small and often concealed areas of septic infection—in the tonsil, the pharynx, the nasal sinuses, the prostate, the cervix uteri, the appendix, the uterine appendages, the gall bladder, and other organs. Hunter's earlier conclusions had reference to the graver forms of anaemia, and he was the first to point out the causative associations of oral sepsis with pernicious anaemia. We are now learning the full truth of his work. We are quick to recognize the dependence of anaemia, of glandular diseases, of certain obscure fevers, of various forms of "rheumatic" affections, of gastric and intestinal disorders, of severe affections of the kidney, and of many affections of the nervous system—from neuritis to functional nervous and mental diseases—of perhaps all forms of cardiac diseases, upon "focal sepsis." In the days before Lister, so my teachers told me, the surgeon would look with apprehension for a blush around a recent wound, and would lay his fingers upon the sterno-clavicular articulation to discover whether the joint was tender. Pyaemia, which laid waste the joints of the limbs in a riot of rapid disorganization, was the most dreaded of all the consequences of wound infection. It was not infrequent for the sterno-clavicular articulation to be the first of all the joints to be affected. Rheumatoid arthritis is pyaemia moving slowly.

My acquaintance with the mental disorders consequent upon infection is not enough to entitle me to speak with an authority in the least degree comparable with that of the distinguished alienists who will contribute to this discussion. But no one who has been attracted to the study of the mind's working in health (if we may for the moment assume the existence of such a state) and in disease can have failed to notice the close relationship of aberrant mental states to organic diseases, especially those owning an infective origin.

My own attention was first attracted to this subject many years ago, when gastric surgery was in its early days. It was no uncommon experience then to operate

upon patients who had for many years lain under the accusation of being "neurotic." For long periods of time they had complained of pain after food; they had in consequence reduced the amount of food taken, restricting themselves to a diet the ingredients of which were readily absorbed or easily propelled; they were often wasted, querulous, ill tempered, hard to live with; and their social reactions were not improved by the repeated denial of the reality of their sufferings. Yet when an operation was performed, an advanced condition of organic disease of the stomach, for example, was discovered; and by degrees it became realized that the patients had good cause for the complaints which they made. The existence of organic disease in those called "neurasthenic" was often so certain, though obscure, that I endeavoured to impress upon students that the literal translation of the word "neurosis" was "I don't know." Neurosis was the word which covered (and still covers?) a great deal of ignorance. This experience does not indicate merely a mistake in diagnosis by a succession of observers. For the state of the patients fully justified their inclusion among a group of victims of functional psychoses. The point is rather that continuous physical illness, infective in origin, leading to gross organic disease, long unrecognized, has produced a real mental disorder which was regarded as primary, and therefore unrelated to any physical change. The difficulty was, and is, to discover in such patients the focus of infection, or its sequels, which might be the cause of the psychosis.

We are not entitled to make a diagnosis of "neurosis" until we are completely satisfied that, as far as our means of investigation permit, no organic disease is present. When we remember that, in respect of the abdominal viscera, though there is little more to learn of their structural diseases, there is little yet learnt of their functional disorders, we may still be merciful and reluctant in our use of the word "neurosis." The physiologists, owing to their concern with mice rather than with men, have not kept pace with the surgeon in his advancing knowledge of the normal and disordered function of the abdominal viscera. Though an organ may appear to the naked eye to be normal in position and in structure, we cannot be sure that its functions are unimpaired, or that its relations with other organs have suffered no change. When the physiologist works as long in the wards and in the operation theatres as in the laboratory, we may hope to fill up some of the many considerable gaps in our knowledge of functional anatomy.

Each generation of students in medicine, as in other sciences, has to make its own experience. Positive knowledge we may derive from the store created by our intellectual ancestors; but the application of this knowledge, the proof of it, lies with ourselves. In our purposeful testing of truth we are prone to error. Experience is the name we give to our mistakes. After I had learnt by experience of this plain association of disordered mental conditions, of "functional psychoses," with visceral disease I discovered that a century ago the same views had been held and taught by Abernethy in this country and by Pinel in France. Chalmers Watson,[1] himself a pioneer in this branch of inquiry, quotes Pinel as saying in 1809:

> "It seems that the primitive seat of insanity generally is the region of the stomach and intestines, and it is from that centre that the disorder of intelligence propagates itself as by a species of irradiation."

That functional psychoses may be dependent upon minute changes in structure in the brain is indicated by the work of Cotton, who describes a "fatty degeneration of cortical nerve cells." In treating these patients he holds that we are dealing, not only with a disorder of the mind, but with a structural disease of brain tissue.

The experiences to which I have referred accumulated slowly. Their general effect was to make me less reluctant to consider surgical treatment for obvious organic disease in those suffering from grave forms of mental disorder. About fifteen years ago I was consulted by a medical man who in childhood had suffered many times from appendicitis, and in adult life had been attacked by hepatic colic, lately accompanied by jaundice, rigors, and wasting. It was clear that there was an obstruction of the common bile duct by a stone, that there was a degree of chronic pancreatitis, and that these were possibly linked up with the disease of the appendix which had affected him in earlier years. But the doctor was "insane"; his form of insanity was of the kind now described as "manic depressive." The effect of a major abdominal operation upon a man with a grave mental disorder had to be considered. I have a useful ready rule, that "it is unwise to allow a patient to suffer or to die from one disease remediable by surgery because he happens to have another." The patient accepted operation, made the usual recovery, and in his own words a "cloud was lifted from his brain." He has been at work, except for holidays a little longer than I feel able to take, ever since, and has had no breakdown in mental health. In all I have operated upon four cases of this form of insanity, and in three the improvement in mental health has been considerable. The fourth was certainly not improved, and though there are longer intervals of apparent normality the "attacks" are as grave as ever. A good deal depends, no doubt, upon the stage at which such patients are seen. The surgeon has very properly been reluctant to undertake any surgical adventure if there are grave adverse circumstances. He has not always realized that such circumstances may perhaps afford more compelling reasons than any for early surgical relief. Now that it appears probable that certain mental disorders are directly dependent upon distant organic diseases, often infective in origin, the removal of those likely causes must be undertaken without misgiving.

In the case of a distinguished medical man upon whom I operated for chronic appendicitis and gastric ulcer, outbreaks of mental disorder had necessitated his seclusion for two long periods. At the time I was consulted about him grave questions were raised as to his mental state and as to the effect of the ordeal of an operation upon him. He contemplated operation with almost a frenzy of fear and horror. My opinion that operation should be delayed only until the advanced dental infection was removed seemed calculated to have disastrous consequences upon the patient and to be a source of deep anxiety to his relatives. All ended happily, however. The usual routine of my abdominal cases was followed: the oral sepsis was first eradicated (this, I insist, must be done, and any other infection treated), the diseased appendix was removed, and partial gastrectomy was performed. Since the operation, now a few years ago, there has been unimpaired mental clarity and strength.

It is interesting to observe that a few of the "insane" patients upon whom I have operated have been members of my own profession. All the attributes of mind and character embraced in the word "sanity" should find a high expression in the doctor. The results of operations upon which mental no less than physical health depends are submitted to a sterner test than usual. The after-history of my cases bears eloquent witness to the value of Hunter's work.

That focal infections, with the organic diseases which they may originate, are capable of causing serious mental disturbance is, I suppose, no longer a matter of doubt. But certain aspects of the problem require careful investigation. We wish to know the frequency of "septic psychosis," of mental disorder due solely to septic infection. We seek to discover the degree of contributory influence exerted by sepsis upon mental aberrations which are primarily psychogenic. What influence has focal infection upon those whose heredity involves them in neuropathic or psychopathic tendencies; or upon those suffering the stormy crises of adolescence, or passing tranquilly through the lethargic involutions of senescence; or upon those who suffer the physiological excitement of child-bearing and lactation? In all these infection, no doubt, finds easy victims. We desire to learn also something of the peculiar circumstances in which a very prevalent disorder, oral sepsis, is sometimes able to exert the gravest influence, and at other times seems inert even though present in an advanced stage. In this the whole question of immunity, in which both Hunter and Lister were interested, is engaged.

Focal infection is certainly free to cause the most serious effects at a distance, while arousing no suspicion as to its existence. The distant and apparently unconnected diseases

may arise, progress, and prove fatal without a sign of local disturbance. This cryptic quality is the source not only of danger but of disbelief. It seems at first hearing quite incredible that results so grave and so formidable could be the direct consequences of causes so trivial and remote. But that they are is now beyond the region of dispute.

The organisms responsible in the occult infections are almost always streptococcal. Numbers of them are described, and to the variants descriptive titles are given. The cultural characteristics as tested in the laboratory are classified. Some day it will be generally recognized that the human body, variously constituted, is a fertile culture medium, and that organisms may also be classified according to their choice of a specific human soil in which to grow. Rosenow speaks of the elective localization of micro-organisms, and this may be decided by qualities of soil no less than of germs.

So far as my own work is concerned the infective agencies which appear to be sometimes associated with mental disease are in the teeth, the facial sinuses, the alimentary tract, and the gall bladder. We know, I think, that these infections are often connected with one another, that oral sepsis may, and often does, precede organic disease in the stomach; that infections of the appendix lead to diseases of the gall bladder and pancreas; and that infections, wherever arising, are apt when they reach the caecum and ascending colon to remain there, long after the primary focus has ceased to be active. It would appear that, among the many causative agencies producing diseases of the mind, infection may assuredly be counted as one. Other factors are obviously at work also, and by comparison with them infection may take a subordinate place. My work shows at least this—that mental instability and "insanity" may sometimes be relieved, and apparently permanently removed, by eradication of a focus of infection, or removal of the diseases it has originated. I have seen more than enough to convince me that the doctrines of Lister applied, not only to surgery, but as by William Hunter to general medicine, may find a very fruitful application in the investigation and treatment of cases of mental disease. The work of Cotton and Draper in New York, of Hall in Vancouver, and of Graves in this country seems to set us a new standard of inquiry in this branch of medicine, and to show that no mental hospital will in future be considered as adequately equipped unless it has an *x*-ray laboratory, a skilled bacteriologist, and can command the services of an enlightened surgeon.

REFERENCE.
[1] *Journ. Med. Sci.*, 1923, lxix, 52.

DISCUSSION.

Dr. CHALMERS WATSON (Edinburgh) said that the view that a septic focus in the teeth, sinuses, tonsils, prostate gland, or gastro-intestinal tract might be the cause of common remote systemic disorders was gradually gaining ground, and the work of Rosenow was of great value in helping to explain the mechanism of its production. For many years the speaker had taught that diseases of the nervous system, such as disseminated sclerosis and many acute and chronic mental diseases, took origin in a septic focus in the gastro-intestinal tract, including the gall bladder, or elsewhere, this being most frequently a secondary development from sepsis in the mouth. In this connexion it was a further hopeful sign that attention was now commencing to be given to the important subject of the cleansing of the colon. More attention should be directed to the examination of the stools and urine as a guide to the diagnosis and treatment of many general and mental disorders. The use of the senses of sight and smell in the case of the stools, after the repeated use of a Plombières douche, was the main essential; this examination should be combined with a careful naked-eye and microscopic examination of the urine for the presence of bacteria and cells. Healthiness of the mouth, bowel, and urine must be secured, and some standards ought to be established. The excessively putrefactive condition of the stools which was apparently accepted as normal to-day could be proved to be abnormal; it indicated a profound disturbance in the balance that normally obtained between the bacteria in the bowel and their host. Restoration of the normal balance, quantitatively, was of great value in treatment, in proportion to the stage in the disorder at which it was applied. The surgical removal of a localized septic focus, dietetic measures directed to improve the condition of the intestinal flora, lavage of the colon, if thorough and combined with vaccine therapy, deserved more attention. According to Dr. Ford Anderson, the one medicinal remedy on which Lord Lister placed any reliance was Epsom salts. To lay stress on the importance of sepsis as a cause of mental and other disorders was not to minimize the part played by such an important factor as heredity, and by disturbed conditions of nutrition, such as calcium or iodine deficiency.

Dr. H. A. COTTON (Trenton, New Jersey, U.S.A.) said that nearly every mental case was physically ill at the time of admission to hospital. The work at Birmingham under Dr. Graves went beyond anything that had been done in the United States. Dr. Cotton considered non-specific protein therapy an advance on the use of vaccines. He no longer recommended colectomy, but used copious colonic douches instead. The results of this irrigation in 600 cases had been very satisfactory.

Dr. T. C. GRAVES (Birmingham) began with a tribute to Dr. Lewis Bruce, who had extensively discussed this subject twenty-one years ago. Dr. Bruce believed that the cause lay deeper than a toxaemia, being the result of a failure to form antibodies. Dr. Graves then described a case to illustrate the possibilities of thorough disinfection.

The patient was a single woman, aged 21, the fifth and youngest child of a mother aged 44. The mother had had three "nervous breakdowns," but was not certified and was now a mental and physical invalid. Two brothers and one sister had suffered from chronic nasal disease. The patient had had chronic otitis media since the age of 3. She was a quiet reserved girl, never on the alert. Menstruation was irregular until a mastoidectomy was performed when she was 19, when it became regular. After the operation she became depressed, with persecution and suicidal obsessions; she improved for a time, and then grew noisy, restless, exalted, hallucinated, and confused, with katatonic manifestations. The face was covered by a scattered staphylococcal eruption; the tonsils were septic, there was pus in the right nostril, the left antrum was darker than the right, and there was a muco-purulent cervical discharge. The serum was negative to typhoid, paratyphoid A and B, *B. aertrycke*, to Shiga's baccillus, and to Flexner's Y bacillus, but agglutinated Gaertner's bacillus. Eight intravenous injections of T.A.B. vaccine were followed by a rise in the titre of the serum to all the above except paratyphoid B, and by considerable clinical improvement, although she remained depressed. A sinus examination then showed pus in the left sphenoidal sinus and both antra. The antra were washed out, and this was followed by an exacerbation of the skin eruption. A second wash-out was followed by much improvement in the latter. The brain membrane permeability value returned to normal. Another course of non-specific protein therapy was then given, and ultra-violet light treatment was instituted. Intranasal drainage of both antra was performed. The patient was now well and was reported to be alert as never before.

Dr. Graves suggested a "septic heredity" in this case, or alternatively transmissible familial infection. The high agglutination to the bacilli of food poisoning suggested that she had acquired a food poisoning infection with neurotoxic possibilities at some time.

Dr. D. K. HENDERSON (Glasgow) challenged some of Dr. Hunter's statements. The Royal Medico-Psychological Association had frequently considered this topic, and in 1902 the late Sir Thomas Clouston had opened a discussion on it, expressing views which were still held to-day. It was not true that no attention had been paid to the possible influence of sepsis as a cause of mental disorder previous to the publication of Cotton's reports. The work of Kopeloff, Kirby, and Cheney had been much better controlled than was that of Cotton, and accorded more with the opinion of psychiatrists generally. Kopeloff and Kirby had examined 120 patients, divided into two groups as nearly identical as possible. One group was treated surgically, while the other group had no surgical treatment. The percentage recovery rate of the manic-depressive patients in the two groups was equal, while patients with dementia praecox showed a slightly lower recovery rate in those operated upon than in those left alone. Dr. Hunter

had generalized from one case. It was a commonplace in psychiatry to say that each case was an individual problem, but instead of accepting this Dr. Hunter said, "Here is one case, see the brilliant result accomplished; there must be hundreds like it." Take the case which Dr. Hunter had quoted with so much enthusiasm and commendation. Not only was it imperfectly described, but it was diagnosed as "a septic psychosis." In the speaker's opinion the case would be more accurately described as one of agitated depression occurring at the involutional period, and if it had been properly recognized at first the patient would never have been sent to the chronic ward. The course of the illness was quite in accord with psychiatric experience, and the increased attention, the change to better surroundings, and the building up of resistance had as much to do with recovery as the removal of her teeth. To say that the failure to remove the teeth in the first instance caused the patient's detention in hospital for two years was an unwarrantable assumption. Similarly in Dr. Hunter's second case, with its acute onset, tempestuous course, and recovery with good insight, a good prognosis would have been given, and the operative procedures were merely concomitant. Dr. Hunter had attempted to coin a new psychiatric term; for many years psychoses with toxins and infections had been recognized, and such a term as "septic psychosis" was not required. To divide all psychoses into the septic and the others was not permissible on the actual facts. It was very dangerous to state that because something existed in a given mental case that something was the specific agent. If in some half a dozen cases there was a *B. coli* or streptococcal infection which had not given rise to clinical symptoms pointing to a toxic involvement, such a factor was merely incidental, and might or might not have any influence on the course of the psychosis. Dr. Hunter had given no clinical picture of the disease which he had named "septic psychosis." It was important to investigate all the facts carefully in every case, and not to jump to conclusions. Many a healthy abdomen had been mutilated, and many a serviceable tooth removed as the result of ill-grounded theories of the etiology of mental illness.

Dr. W. F. Menzies (Cheddleton) agreed with Dr. Henderson, and said that the evidences of chronic sepsis were no more frequent in the insane than in the sane. Sepsis was as a rule a secondary cause of mental disorder. The hypothesis that sepsis was an important cause of mental illness was not new; forty years ago colonic lavage and Bouchard's mixture of naphthaline, charcoal, and glycerin were popular in the asylums. As long ago as 1902 he had asked a surgeon to perform a short-circuiting operation in a patient with dementia praecox. The recovery rate had not been materially raised by antiseptic measures. Autogenous vaccines were disappointing. The results of serological, metabolic, and endocrinological tests had all given results that were not at all specific. Dr. Menzies thought that the difficulty in the study of mental disorder was that the observations were made upon complex states such as paranoia and dementia praecox instead of being made upon the basal emotional feeling tones. He referred to the association of Parkinsonian rigidity with euphoria in various basal lesions; in the later stages of epidemic encephalitic Parkinsonism euphoria was almost universal. Pathological euphoria was an expression of the irritation produced in the neurones by a free flow of toxin-laden blood. In toxic mental conditions there was increased stimulation of the splanchnic reflex arcs by some toxin, probably of bacterial origin, together with irritation of the basal and cortical neurones from toxins in the blood. In the absence of rupture between the basal and cortical groups, dysphoria occurred. If there were partial dissociation, euphoria was produced. It was a pity that surgeons and physicians rarely described the mental attitude and feeling tone of their cases.

Mr. E. Watson-Williams (Bristol) supported the view that chronic toxaemia could produce a definite psychosis, just as it constantly caused a neurosis. He instanced cases under his own observation which had been relieved by operation.

Dr. W. A. Potts (Birmingham) discerned a very distinct clinical picture in Dr. Hunter's description; the term "septic psychosis" was the most satisfactory one he knew. Although chronic sepsis was as common in the sane as in the insane, the reason why it was to be considered as a cause of mental disorder was that in the insane there were many other contributing factors, while the septic infection had begun earlier and had, therefore, lasted longer and produced greater effects. Infection should always be eradicated before its serious sequels had developed. It was likewise necessary to deal with the psychological factors early, before the sepsis of later date had produced such mental disability that psychological treatment was out of the question.

Dr. Hunter, in reply, insisted that the important point was the focalization of the infection. The advantage of the term "septic psychosis" was that it called attention to the cause. Kopeloff's patients were not satisfactory clinical material; the morbid process in them had lasted a long time, and the sole step taken was the elimination of a few teeth. The only patient who did well had had thirty teeth removed.

ACUTE INTESTINAL OBSTRUCTION IN INFANCY AND CHILDHOOD.

CONGENITAL ABNORMALITIES: ACQUIRED CAUSES: TREATMENT.*

BY

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Acute intestinal obstruction in children presents much the same symptomatology as in adults. It is a fatal malady, but with relief in prospect the prognosis in children may be somewhat less serious than in those of maturer years. As an offset to this relative benignity must be placed the fact that in many of the obstructions due to congenital malformations relief is not possible.

Children stand intestinal obstruction comparatively well, for the reason that the child's intestine is less prone to ileus than the adult's. For example, children suffer less from post-operative colic than grown-ups, and they also seldom show any deterioration from minor degrees of chronic obstruction. In the main, however, the disease is alike at all ages, and it does not really add any special complication to consider the matter as it presents itself in the young. There is one class of obstruction which is entitled to separate consideration—I refer to obstruction due to congenital deformities.

1. *Duodenal Stenosis.*

From time to time instances of this type are reported in the journals. Probably a complete stenosis is commoner than one which is incomplete. A feature of these conditions, as indeed of all developmental obstructions, is the tendency for the bowel distal to the obstruction to be in a state of what might be described as embryonic spasticity. Thus a functional atresia is superimposed upon the anatomical. It is to the former condition that we must ascribe the wellnigh hopeless prognosis. The obstruction in the duodenum is usually proximal to the entrance of the bile duct; it may, however, be in the region of the ampulla, while there may be anomalies of the pancreatic duct. Three varieties may be recognized: (*a*) those which present a gap in the continuity of the bowel and where the duodenum above is much distended, (*b*) those which show merely a partition in the bowel, and (*c*) cases where the lumen is narrowed to a serious extent; this type may be due to an inherent lesion of the duodenum itself, or be the result of fibrous bands crossing the bowel, or be due to rotatory errors during development.

Fortunately the condition is one of considerable rarity,

* A paper read in opening a discussion in the Section of Diseases of Children at the Annual Meeting of the British Medical Association, Edinburgh, 1927.

for it is seldom diagnosed early enough for successful treatment. Indeed, it is rarely possible that any treatment could be curative, on account of the non-distensibility of the jejunum being almost if not always an accompaniment.

The symptoms upon which most reliance must be placed are early and persisting vomiting, with, in many cases, icterus. The combination of icterus with vomiting is suggestive, but, on the other hand, there is no special characteristic about the jaundice to distinguish it from the common fleeting icterus neonatorum. As a rule these infants are brought under expert observation only after the fourth day, when intervention, even if theoretically possible, is useless. The examination of the meconium may reveal that it does not contain any down from the foetal skin, but a negative finding is inconclusive.

The operative repair of such a condition is one which will tax both the child and the surgeon. Gastro-enterostomy and duodeno-jejunostomy are operations having a high mortality in infants, even before they show signs of breaking up, but in a moribund infant there is little hope of success. The operation is practically doomed to failure if it consumes more than twenty minutes. I cannot claim a single success, even though, in one instance, a gastro-enterostomy was carried out in eleven minutes; the deeply jaundiced infant was 5 days old and showed a complete stenosis of the duodenum, which was dilated, while the jejunum was hopelessly shrunken.

2. *Jejunal and Ileal Atresias.*

These conditions may be due to gaps existing in the bowel, to obstructions from congenital tumours which more or less replace the gut, and to impermeability of the bowel in short or long sections. The proximal bowel is usually much distended and shows a great contrast to the under-development of the lumen distal to the defect. Certain of these cases are associated with errors in rotation, and the obstructions may be multiple. There is no special situation where these deformities are more likely to occur, but as a rule they should be looked for high up in the jejunum or low down in the ileum in the neighbourhood of Meckel's diverticulum. Theoretically these anomalies should be easily remedied, but the under-development of the lumen of the bowel distal to the obstruction forms an insuperable barrier to restoration. An enterotomy of the distended bowel is essential, as otherwise the developing ileus is bound to be progressive. The proximal bowel, already enfeebled by overinflation, cannot blow out the semi-solid distal intestine.

3. *Colic Obstructions.*

It is said that gaps are found less commonly in the colon than in the small intestine. If we omit the pelvic colon this statement is probably correct. It is, however, comparatively common to find the colon end abruptly at the place where it should join up with the rectum, but probably the commonest type is the non-development of the lumen. The entire colon is apt to be involved. The rectum may be normal, but in its upper part it will be found to become conical. These cases are occasionally diagnosed as imperforate conditions of the rectum. Their treatment is quite beyond the range of surgery. In cases where union between pelvic colon and rectum has failed to become established an attempt is often made to tunnel through the intervening tissue, but if an entrance is gained to the lower end of the blind pelvic colon an inveterate stricture subsequently develops. A primary inguinal colotomy is the only possible solution of the trouble.

In my experience errors in rotation of the colon do not produce obstructions of the colon but rather of the ileum.

4. *Rectal Obstructions.*

Malformations of the rectum are so frequently associated with malformations of the urethra and bladder that the cases are very complicated, but if the possibility of the membranous urethra being involved is remembered our treatment may be more successful. Where the sphincter is defective an artificial anus should never be made in the perineum; this is the worst possible site for such an opening. As an emergency measure the sinus into a cloaca may be widened at the expense of the perineum, but in doing so the possibility of damaging the sphincter should not be forgotten.

5. *Exomphalos.*

Hernias into the umbilical cord are a class by themselves, and strangulation is unusual as rupture of the covering membrane occurs too early, with the production of a fatal peritonitis. An obstruction may, however, be present, and it may involve both large and small bowel. Suffice it to say that all cases of exomphalos should be operated upon as soon as possible. In one case the radical operation was successfully performed and the infant returned to bed aged 1 hour.

6. *Meckel's Diverticulum.*

A more prolific cause of trouble from congenital abnormality is produced by a Meckel's diverticulum. The diverticulum may be adherent at its tip to the inner aspect of the umbilicus and a loop or loops of bowel may become entangled round this intra-abdominal pillar. The tip of the diverticulum may become adherent to visceral or parietal peritoneum, and may act as a band strangling one or more loops of bowel.

7. *Strangulated Hernia.*

Among the innumerable instances of hernia it is fortunately unusual for many to strangle, yet the condition is quite common none the less; it calls for no further comment.

Acquired Causes.

It would be futile to go into all the various causes of acute obstruction in children, but I might refer to one or two types which are frequently met with. To begin with, it must not be forgotten that the term "acute obstruction," which refers to symptoms, is not synonymous with "complete obstruction," hence the dividing line between acute and chronic obstruction is a broad one. We have acute exacerbations superimposing themselves on the chronic, and as in children the chronic part is masked we will have, clinically, only the attacks of acute obstruction recognizable. Under this aspect of the case would come to be considered those obstructions which resulted from a tuberculous infection of the mesenteric glands with band formation, or adhesions with more or less kinking of the bowel (and consequent narrowing of the lumen) from a contracting cicatrix. These conditions are often associated with a healed tuberculosis, but they may crop up during the infective stage of a plastic peritonitis. How far the final stage in any peritonitis is due to obstruction is a point on which discussion might profitably take place. Whatever the cause of the obstruction the symptoms will vary according to the level and degree of completeness of the stenosis and to the degree of interference with the circulation. Symptoms indistinguishable from those produced by obstruction may be set up by other conditions without implication of the lumen of the bowel at all. For instance, strangulated omentum, a strangulated Richter's hernia, and a mesenteric embolism will produce a set of symptoms almost incapable of differentiation from a true obstruction. So much is this the case that we are greatly given to label a particular lesion as an example of the acute abdomen, and are content if we decide for or against exploration.

It is the general custom to classify intussusception among the obstructions, and I would like to enter a protest against such an arrangement as conducing to delay in operation. Intussusception is no more an obstruction than appendicitis is a general peritonitis. Both are alike in this respect, that under such a view they demand treatment before they come into their proper categories; intussusception must be operated upon before it is obstructive, as must an inflamed appendix before it gives rise to a general peritonitis. The risk of leaving an appendicitis till perforative peritonitis has developed is not nearly so serious as leaving an intussusception till obstructive symptoms set in. In intussusception, which is possibly often one phase of the status lymphaticus, death is apt to be sudden and entirely unexpected.

The reference to appendicitis brings to mind the

obstruction which complicates the operation. It develops about the fifth day, usually suddenly, and it requires prompt treatment. I do not refer to the ileus developing with a spreading peritonitis, but to a local obstruction of the lumen of a section of bowel.

Simple tumours rarely occasion an intestinal obstruction. Malignant tumours are so seldom found that we hardly ever think of including them in the discussion of a differential diagnosis.

The symptoms which result from the interruption of the intestinal flow may be briefly considered.

1. *Vomiting.*—At first this may be a reflex phenomenon; it soon, however, becomes a sign of reversal in the direction of the intestinal current. It is persistent, and its character changes in the well recognized manner so that it becomes pathognomonic.

2. *Visible Peristalsis.*—This symptom is probably more fully developed in the chronic obstructions, but it is an important aid to diagnosis even in the acute. It may be accentuated by tapping the abdomen and in some cases by lightly scratching the skin.

3. *Distension.*—To begin with, this is the alternative to spasm, but it soon becomes permanent to the exclusion of the spasm. When the entire small bowel becomes distended the well recognized designation of "ladder abdomen" to the appearance shown is a condition of sinister meaning. No doubt the distension is due to the evolution of gas which cannot find an exit, but soon the overdistension passes into a paralysis, so that mere escape of the gas brings no relief.

Symptoms Due to Interference with Function.

These might be referred to under the following sections:

(*a*) *Toxaemia.*—Chemical changes in the contents of the intestine soon take place; the initial disturbance cannot be explained in this way, but later symptoms and the tendency to death are certainly due to this cause. The experimental work done to elucidate the results of obstruction of the intestine is considerable, and while it has been enlightening it has added an element of complexity. The action of the chlorides, which are so quickly reduced in the circulation, has been proved to be of the greatest importance in such toxaemias as we are considering, but that their repletion is the desideratum is not yet established. Whether a distortion of metabolism takes place in the wall of the bowel, due to the pressure of the distension or to chemical changes instituted by the infection of the enteric fluids, is not decided. It is, I think, proved that the gas-producing organisms make highly toxic substances, and we thus have to attempt to inhibit such manufacture from the point of view of gas as well as toxin. It is more than likely that a vicious circle is set up—the more toxin the greater the inflation, and vice versa. Distension alone is serious from its pressure effects on the thoracic organs, its interference with deep respiration, and with the heart. From clinical experience, as from scientific research, the emptying of the bowel, etc., is essential.

(*b*) *Disturbance through the Sympathetic.*—Some of the symptoms might be so explained. By wearing out the action of the sympathetic ganglia the pneumogastric inhibition becomes more active or the vagus is initially stimulated, and the heart shows the effect sometimes very rapidly. Thus irregularity of the pulse in intussusception is often an early sign. Of course, a toxin might well have a direct action on the heart without reference to the nervous system.

(*c*) *Paralysis of the Bowel.*—This condition will develop at a period governed to some extent by the nature and situation of the obstruction, and whether the obstruction be complicated with peritonitis.

(*d*) The changes in the circulation of the bowel and the reflex stimuli will account for the effusion of fluid which takes place almost invariably with an obstruction.

(*e*) *Peritonitis from Perforation.*—As the result of gangrene this very serious catastrophe may set going its own series of symptoms, but as a rule death takes place before this occurs. Examination by *x* rays is rarely possible, as we rightly hesitate to allow the expenditure of the time required, to say nothing of the difficulty and disturbance caused by trying to force the retention of the opaque meal.

Treatment.

The stomach should be washed out early in the anaesthetic period, and great care should be exercised that none of the stomach contents finds its way into the trachea. I do not propose to touch on all the various plans of treatment possible of adoption, either from the point of view of operation or as adjunct treatment, but rather to refer to some aspects of the matter which are discussible.

After opening the abdomen, distended bowel should be avoided, and a gentle search for undistended gut instituted, the obstruction being approached from the sound side. After the obstruction has been relieved, if anything further is required we are often placed in a dilemma whether to resect, perform a lateral anastomosis, or to be content with an enterotomy. There does not seem to me to be any great reason why an enterotomy should not be done irrespective of whatever else may have been demanded. We dislike making a fistula, but these fistulae (in children at any rate), if made through the omentum, show a great tendency to spontaneous closure. The omentum should not be pushed aside, but the most prominent loop of bowel above the umbilicus should be drawn through a hole made in it. An enterotomy likely to function should be made high in the jejunum.

The handling required in resecting is against its success, and so the quick methods of performing intestinal union are attractive. The possibility of adding infection to the already damaged abdominal contents is to be avoided at all costs. It is a decided advantage to leave as much saline in the abdomen as it will hold, and I think the addition to it of 5 per cent. cane sugar, a half to one cubic centimetre of pituitrin, and the same quantity of adrenaline, is beneficial.

The Anaesthetic.—The choice of an anaesthetic is of importance. Most surgeons dislike chloroform for an intestinal obstruction, but where chloroform gains is in its greater power of producing muscular relaxation. A shorter incision suffices, and manipulation in the abdomen is facilitated, with consequent shortening of the operation time. As obstruction is more often associated with an alkalosis than an acidosis, it is possible that this general dislike of chloroform may not be an entirely sound doctrine. In this connexion the recent proposal to introduce pepsin and hydrochloric acid with saline into the peritoneum as a remedy in peritonitis may find support, and the almost invariable rule to give alkalis and glucose may require to be sometimes departed from. The advice to give excess sodium chloride may well receive a careful trial, not only because its quantity has been reduced, but also because it has a direct antagonistic action on the toxins developing in the distended bowel. It certainly tends to reduce the dehydrating effects of the poisons.

Enteritis after Operation.—This is a condition which is prone to develop in children at all times, and more especially after damage to the intestine. Grey powder and so-called intestinal antiseptics may be indicated. I have found the oral administration of normal horse serum to be most effective.

Pneumonia.—Trivial changes in the atmosphere, in the temperature of the sick-room, etc., cannot account for the onset of this complication, but it is almost certainly due to a toxaemia or septicaemia.

Pyelitis.—After intestinal operations I think there is a direct tendency for a *Bacillus coli* septicaemia to become established, and I have observed a few cases where pyelitis resulted from an enterectomy. The urinary infection has thus a common source with that causing pneumonia.

There are many other complications which occur, such as those referable to thrombosis, etc., but it is unnecessary to elaborate the matter further.

Prognosis.

The important item in the prognosis is the degree of ileus present, and this will depend to some extent on the amount of handling which has been found necessary at the operation, as well as upon the nature of the obstruction

and the general robustness of the child. Where evisceration has been performed the prognosis is bad. Scientific investigation may help us to neutralize the toxins and restore motility to the overstretched intestine.

An early diagnosis, followed by prompt intervention, is still the thing which matters most.

Discussion.

Mr. L. E. Barrington-Ward (London) emphasized those points in symptomatology and physical examination which his experience led him to believe were most helpful in diagnosis. He hoped the day was not far distant when, as a result of earlier diagnosis, the surgeon would seldom be faced with the difficult and debatable problems of how to deal with an irreducible mass in intussusception or treat a length of gangrenous intestine. The patient's age was often of assistance in deciding beforehand the nature of an obstruction in early life. He referred at length to some of the rarer forms of intestinal obstruction in childhood. (1) Internal hernia—(*a*) through a congenital hole in the mesentery or omentum, (*b*) diaphragmatic, (*c*) retroperitoneal. (2) Volvulus of the small intestine apart from volvulus neonatorum. He based his remarks on the latter form upon a series of six cases which had occurred during a period of twenty-five years at Great Ormond Street Hospital. All were dependent on a deficient attachment of the mesenteries of the small intestine and ascending colon. The diagnosis of the condition from ketonaemia had presented great difficulties, and he thought the character and time of onset of the abdominal pain were the points which were likely to be of most help in differentiation. In the treatment of intussusception he had tried and been impressed with the value of Farr's method, which consisted of an injection of air into the colon followed by a small abdominal incision to enable the reduction to be completed. This procedure eliminated the element of uncertainty of the older method of reduction by inflation alone, and was associated with less shock than complete reduction by laparotomy. Where reduction was impossible he was in the habit of resecting and performing an anastomosis at once. The infant did not seem to tolerate temporary drainage well.

Miss Gertrude Herzfeld (Edinburgh) referred to the fact that in acute obstruction in children abdominal distension was usually not a striking feature. She emphasized the desirability of combating dehydration and washing out the stomach as preliminary measures. As a routine anaesthetic in these cases she preferred open ether combined with local infiltration, but recently had been using spinal anaesthesia successfully in cases of intussusception. Where distension of the bowel was marked she did not hesitate to perform immediate puncture of the gut by means of a fine trocar and cannula. She did not agree with Mr. MacLennan's contention that obstructive symptoms were so definitely secondary in intussusception that to include the latter under the category of acute obstruction was calculated to lead to delay in operating. It was her experience that in the majority of cases obstruction of the bowel was complete within three or four hours. She had had 109 primary cases of intussusception under her care during a period of seven and a half years—71 in male and 38 in female children; 78 were in children under 1 year old. One child was moribund on admission and died without an operation. Spontaneous reduction occurred in three instances; immediate operation was performed in the remaining 105 cases. A recurrence took place in 7, and in one case proved fatal. Including the recurrences, 112 operations were carried out, with 24 deaths, giving a death rate of 21.4 per cent. In the last 50 cases, however, there had been only 7 deaths—that is, a mortality of 14 per cent. This improvement was chiefly due to earlier diagnosis on the part of the practitioner. As regards the type, 84 per cent. occurred in the ileo-caecal region, 11 per cent. were of the colic, and 5 per cent. of the enteric variety. All the colic cases recovered. Most of the 7 recurrences took place from eight to fifteen months after the primary operations. It was interesting to note that in 2 of the recurrent cases fixation of the caecum had been performed at the first operation. There were 9 cases in which resection was found to be necessary, with 5 deaths. Tearing of the peritoneum, even when extensive, was not in itself regarded as an indication for resection. During the same period 16 cases of obstruction due to abdominal tuberculosis had occurred; there were 6 deaths, all in children under 3 years. Of obstruction due to irreducible and strangulated hernia, there were 22 examples; the average age was 5½ months. Resection was necessary on two occasions, once in a baby of 12 days. All the patients in this group recovered. In the course of 197 cases of acute appendicitis 6 examples of true post-operative obstruction arose. The average time at which operation for this complication was called for was the fourteenth day after appendicectomy. The methods of dealing with this emergency were discussed. The only fatal case was one of streptococcal appendicitis in which obstruction occurred on the fifth day after operation and an enterostomy was performed.

Mr. F. C. Pybus (Newcastle-on-Tyne) dealt with the sequence of development and relative importance of the symptoms and signs of obstruction. He maintained that it was often possible to determine beforehand the nature of an obstruction from a carefully taken and interpreted history. He quoted cases illustrative of the difficulties of diagnosis, with special reference to ketonaemia and Henoch's purpura. Chloroform as an anaesthetic was to be avoided.

Mr. Norman M. Dott (Edinburgh) submitted two theses for consideration: (1) that, inasmuch as children suffering from acute intestinal obstruction tolerated operations up to one hour's duration remarkably well, delicate accurate technique should not be subordinated to mere speed in operating; (2) that resection was possibly the best treatment in certain cases of intussusception in which the bowel, though reducible and viable, was yet severely bruised in the process of reduction. He developed his argument from a review of 20 cases of intussusception which he had been called upon to treat during the past two years. All these cases had been operated on and 4 deaths had occurred. In 3 of the fatal cases the condition was so severe and advanced on admission that a fatal issue was wellnigh inevitable; he had thought it right, however, to give them the chance offered by operation. The fourth fatality was in a baby of 5 months who had a double intussusception of fourteen hours' duration. Reduction was extremely difficult, but was finally accomplished with viable bowel. The immediate effect of the operation was negligible, but the child's condition rapidly deteriorated and death took place after twenty hours. The cause of death, in Mr. Dott's opinion, was toxic absorption from an excessively bruised bowel, and he believed that removal of this injured segment might have been a life-saving measure. Excluding the 3 unavoidable fatalities, his series was reduced to 17, with one death. The 16 recoveries took place in cases which on the average were of a severe type. In operating great speed had not been aimed at. It was his rule to make a "gridiron" or rectus displacement incision, to carry out fixation by the finest interrupted silk sutures, and to close the wound deliberately in layers. Further, 3 of the 17 patients were subjected to procedures of considerable magnitude. One was a baby of 10 months, who had an ileo-colic intussusception of forty-three hours' duration. A good recovery followed an operation which occupied thirty-five minutes. Four days later an enteric intussusception developed, necessitating a second laparotomy. Another child, of 4 months, had an ileo-caecal intussusception of five days' duration. Reduction was impossible and a right hemicolectomy, with lateral anastomosis by the aseptic method, was performed. The operation lasted one hour. The third was a child of 3 months with a gangrenous ileo-colic intussusception of three days' duration. A right hemicolectomy, with end-to-end anastomosis by the aseptic method, was carried out. Recovery in these three cases was uneventful.

Dr. H. C. Cameron (London) spoke of the need for early diagnosis when confronted with the grave symptoms of intestinal obstruction in a newborn infant. There was too great a tendency to wrap the child in a shawl and adopt

a fatalistic attitude. In duodenal obstruction the diagnosis could only be made by an *x*-ray examination in the first few days of life. One such case of duodenal atresia operated on by Mr. Steward made a complete recovery. With regard to acute intussusception, he called attention to the contrast in practice prevailing in Scandinavia. There, in 80 per cent. of the cases, taxis through the abdominal wall without laparotomy was successful. Secondary laparotomy was necessary in the remaining 20 per cent. He referred to the case of a small boy suffering from extreme ketonaemia, with the characteristic tonelessness of the abdominal muscles, who had developed after some days of illness a complicating intussusception. Mr. Jennings Marshall had reduced the intussusception in a moment, and without difficulty. In this case it was the ketonaemic amyotonia that explained the ease of reduction. The differential diagnosis of intussusception from follicular colitis and Henoch's purpura was helped by noting the odour of the blood-stained evacuation. In intussusception the motion was odourless, in the other conditions foul-smelling. Lastly, he spoke of the immense value of a blood transfusion before a young feeble infant was submitted to a severe operation.

Dr. C. P. Lapage (Manchester) thought that the history in cases of intussusception was so distinctive that it was often possible to make a diagnosis before blood appeared in the stools, or even on the finger after rectal examination. The earlier spasms of abdominal pain were often overlooked unless the mother was closely questioned. In the differential diagnosis between obstruction and ketonaemia a history of previous attacks and the presence of certain clinical peculiarities in the latter group were helpful. In Henoch's purpura the difficulty was greater, but as a rule the blood in the motions was more profuse than in intussusception, and the purpura patients were often peculiarly sensitive to rectal examination. He protested against the indiscriminate use of purgatives which was still so common in the treatment of patients with abdominal symptoms. As an illustration of the ability of the youngest infant to tolerate severe surgical procedures, he referred to the case of a baby of a few weeks who had had a mesenteric cyst of the size of its own head successfully removed by his colleague Mr. Morley.

Dr. Margaret Tod (Edinburgh) pointed out that it was often by no means easy to distinguish between acute enteritis and intussusception. Enteritis might determine an intussusception and the history of the antecedent enteritis confuse the issue. On the other hand, at the outset of an intussusception there might be one or two greenish motions, suggesting a diagnosis of enteritis. She had been impressed, especially during a recent visit to America, by the great value of transfusion as a pre-operative or post-operative measure.

DEAF-MUTISM DUE TO A BILATERAL LESION OF THE AUDITORY SENSORY AREAS.*

BY

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In the vast majority of cases of deaf-mutism the lesion is situated in the ear itself. Deaf-mutism is usually divided into the congenital and the acquired varieties.

In Switzerland endemic congenital deaf-mutism is met with in association with goitre and cretinism. Here the lesion is in the middle ear, the niches of the oval and round windows being filled with connective tissue. Many of these patients, however, have fairly good hearing, and the mutism is mainly caused by their feeble mental development. In this country sporadic congenital deaf-mutism is by no means uncommon. The lesion in these cases is in the inner ear and, as a rule, consists in maldevelopment of the membranous cochlea and saccule—the pars superior of the labyrinth—while the utricle and semicircular canals are normal. In such cases the vestibular apparatus reacts normally to the rotation and caloric tests, though the patient is almost or entirely deaf.

Acquired deaf-mutism is due to labyrinthitis, which may result (1) from the otitis media of such infections as scarlatina or measles invading the inner ear; (2) from injury, as in fracture of the base of the skull involving both labyrinths; (3) from purulent infiltration of the labyrinth from the meninges—as, for example, in cases of epidemic cerebro-spinal meningitis, in which the infection may pass to both labyrinths along the eighth nerve; or (4) from congenital syphilitic infection of the inner ear, which, as a rule, only occurs after the age of 9, when the child has already learned to speak. The vestibular tests in cases of acquired deaf-mutism give negative results.

The microscopic changes in the ear in these various kinds of congenital and acquired deaf-mutism have been well known for many years from the work of Politzer, Alexander, Neumann, Denker, Mondini, Scheibe, Gray, and others.[1] Castex, however, holds that deaf-mutism is usually due, not to lesions of the ear, but to changes in the cortical hearing area which may be caused by intra-uterine meningitis. Though we hold that such an occurrence is extremely rare it must be admitted that all cases of deaf-mutism have not been explained by histological examination of the ears. For this reason the following case appears to be worthy of publication.

A male child, aged 3, had suffered from bilateral middle-ear suppuration at the age of 1 year; the cause was unknown. Three months before admission to hospital on August 2nd, 1921, an abscess formed behind the left ear and was opened by his doctor. A week before admission a swelling appeared behind the right ear, with pain and loss of sleep. There was no history of giddiness or sickness. Examination showed the scar of an old mastoid abscess behind the left ear. The left meatus contained purulent discharge and a polypus; there was also profuse discharge from the right ear, and a subperiosteal abscess was present. The child did not speak, but his cry was like that of a child who heard.

On August 3rd a radical mastoid operation was performed on the right ear; there was erosion of the cortex, and the antrum contained cholesteatoma. The incus was absent, there was slight erosion of the lateral canal, and granulations were present in the tympanum. A cold lotion applied to the inner wall produced prompt conjugate deviation to the left. A skin graft was applied, leaving the inner wall of the antrum and aditus uncovered over the erosion in the lateral canal, and the wound was closed. The temperature remained normal after the operation, and the wound and operation cavity were satisfactory on August 7th; seventeen days later the patient was discharged.

Nearly one year later, on June 13th, 1922, the child was brought back with an acute exacerbation of the chronic middle-ear suppuration in the left ear. An abscess had been present over the left mastoid for five days, but there was no vomiting; the child still did not speak, and did not appear to hear. A radical operation was performed on the left ear; there was a subperiosteal abscess and the cortex and whole of the mastoid were hollowed out by cholesteatoma. There was no erosion of the lateral canal. The ossicles were absent and the vestibular apparatus responded promptly to cold lotion. A skin graft was applied. The temperature continued normal until June 28th, when it rose to 99°, and on the next day to 101°; there was slight stiffness of the neck and Kernig's sign was present. The operation cavity appeared satisfactory and there was no nystagmus, but a lumbar puncture showed cerebro-spinal fluid under pressure and slightly turbid. The patient had a lemon-yellow colour.

On June 30th the temperature rose to 103°. At an operation on July 1st the sinus wall was found to be greyish yellow and thickened. Neumann's labyrinth operation was performed on the left side; the internal meatus was opened through the vestibule and a flow of cerebro-spinal fluid was obtained.

On the day after the operation the temperature remained between 100° and 101°; drainage through the internal meatus was not very free. On July 3rd the temperature was 102° and the pulse 164; the cerebro-spinal fluid was still draining. Two days later the temperature was 104°, and death ensued.

At the necropsy purulent meningitis was found at the base and over the left cerebral hemisphere; there was no thrombosis of the venous sinuses. The infecting organism was the pneumococcus.

Microscopic Examination of Right Ear.—The Eustachian tube was closed by thickening of the submucosa, which showed cystic spaces. The tympanum, attic, and antrum were lined with squamous epithelium; there was a gap filled with fibrous tissue in the footplate of the stapes, though the crura were entire. This showed that the gap in the footplate was not due to injury at operation. The round window membrane was only slightly thickened. The cartilage bone capsule of the labyrinth was healthy; the vessels of the fossa subarcuata were dilated, and veins could be traced from the inner wall of the antrum, through the fossa subarcuata to the posterior cranial fossa. On the left side this may have been a possible route of infection from the middle ear to the meninges. The vessels of the modiolus were dilated, and Reissner's membrane was slightly depressed, as is usual in cases of meningitis.

* Read in the Section of Laryngology and Otology at the Annual Meeting of the British Medical Association, Edinburgh, 1927.

The cochlear nerve and ganglion appeared to be normal, if allowance be made for the presence of meningitis. Corti's organ was desquamating (a possible *post-mortem* change), but the acoustic papilla was well formed and the membrana tectoria was in the normal position. The bony spiral lamina was well filled by the nerve, and the stria vascularis appeared to be normal. The spiral ganglion was infiltrated with pus cells from the internal meatus. A few pus cells were present in the scala tympani in the lower part of the basal coil, near the opening of the perilymph aqueduct. There was a little curdled lymph just internal to the footplate of the stapes; the neuro-epithelium of the utricle showed desquamation, possibly a *post-mortem* change. The saccule appeared rather dilated and the otolith membrane was in parts separated from the neuro-epithelium. The ductus endolymphaticus was healthy. The crista and ampullae of the canals were normal except for desquamation of epithelium. The subarachnoid space of the internal meatus was crammed with pus cells; the meningitic infiltration surrounded the vestibular nerve to the utricle and superior and lateral canals, and extended along the seventh nerve almost as far as the geniculate ganglion.

Middle-ear suppuration alone, even when bilateral and dating from earliest childhood, does not produce such a severe degree of deafness as to give rise to mutism in a child of 4 years. The cold caloric test, carried out on the operating table, had shown that on both sides the vestibular apparatus reacted promptly, and that in consequence a former labyrinthitis might almost certainly be excluded as the cause of the deaf-mutism. Consequently one of us (J. S. F.) expected to find on the microscopic examination of the right ear those changes usually associated with sporadic congenital deafness—namely, malformation confined to the cochlear canal and saccule. Such examination, however, indicated an apparently normal inner ear, if allowance is made for *post-mortem* changes and for the results of basal meningitis. The cause of the deaf-mutism, therefore, remained a mystery until the histological examination of the brain, carried out by one of us (S. H. N.), revealed abnormality of the auditory sensory areas in the cortex on both sides.

On microscopical examination of the auditory paths and centres a basal meningitis of pneumococcal origin was seen to be present, and this confused to some extent the histological picture. A "foamy" degeneration of the nerve cells was observed throughout the brain; this was presumed to be due to the meningitis. Haemorrhages were noted in the eighth nerves, but no degeneration, as shown by Weigert's method, was seen. The posterior quadrigeminate and mesial geniculate bodies were well developed.

In the cortex the pathological process was more of a meningo-encephalitis, as perivascular infiltration was observed. The transverse gyri of Heschl (auditory sensory areas) showed marked changes. The cells of the cortex in these regions were represented by small rounded elements, which were nerve cells deprived of cell body and processes. This degeneration caused the topography of the cortex to be lost. The pathological condition was present on both sides, and was in marked contrast to the histological picture of the outer borders of the superior temporal gyri (auditory psychic areas), Broca's area, pre-Rolandic areas, angular gyrus, and the area round the calcarine fissure, which showed normal development.

The case was one of acute pneumococcal meningitis, with the existence of a more chronic lesion in the transverse gyri of Heschl. The fact that the auditory psychic areas were developed presumed the normal development at one time of the auditory sensory regions. It is probable that the auditory sensory areas were subsequently destroyed by some disease process.

REFERENCE.

[1] *Journ. of Laryngol. and Otol.*, vol. xxxvii, 1922, p. 137.

PREVENTION OF EAR DISEASE BY REMOVAL OF TONSILS AND ADENOIDS.*

BY

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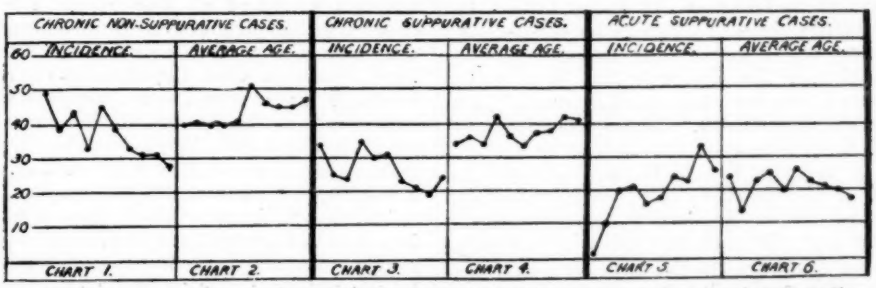
THE answer to the question to what extent the removal of the tonsils and adenoids prevents ear disease is of some importance. I have been accustomed to believe and to preach that, in the very great majority of cases, chronic middle-ear disease in the adult has its origin in childhood. I have also thought that infection associated with enlarged tonsils and adenoids is responsible for such disease in an overwhelming majority of cases, and that excision of these should largely prevent or arrest the middle-ear infection. The removal of tonsils and adenoids by operation has now been widely employed for at least twenty years, and it occurred to me that it might be interesting to try to ascertain to what extent this proceeding was actually diminishing middle-ear deafness in the adult. For this purpose I have made a somewhat laborious statistical examination of the records of my private cases from 1910 until 1926. In this period a total of 1,077 cases of middle-ear disease were dealt with. In judging the result many factors, no doubt, must be taken into consideration, but I believe that, taken as a whole, my practice can be considered as presenting typical results. I have done no particular work in any one direction which would lead to an undue proportion of any particular type of case being referred to me.



Charts showing the incidence and average age in cases of chronic non-suppurative, chronic suppurative, and acute suppurative middle-ear disease.

My first step was to see to what extent I could demonstrate a variation in the incidence of middle-ear disease as a whole. I was surprised to find that, over this period of sixteen years, there was no sign of any diminution in the relative number of cases. As a check I worked out the average age of the cases of middle-ear disease, and again found that this was practically constant. Being unwilling to believe that our efforts at prevention were entirely fruitless, I analysed the figures under three separate groups—namely, chronic non-suppurative, chronic suppurative, and acute suppurative middle-ear conditions.

Taking first the chronic non-suppurative cases, the curve indicating the incidence of these cases does show quite an appreciable downward tendency—that is, cases do seem to be diminishing in frequency (Chart 1). In support of this the next curve (Chart 2), giving the average age of cases, shows an upward tendency, which would suggest that cases are now being chiefly drawn from the period prior to that in which tonsils and adenoids were removed. In the chronic suppurative group there is a less marked diminution in the incidence (Chart 3), and a less marked rise in the average age (Chart 4). Acute suppuration, on the other hand, shows a decided increase in the number of cases, without any obvious change in the age incidence (Chart 5). This increase in the number of cases of acute suppuration is, I suggest, due to the recent prevalence of influenza.

To sum up: There is a decided diminution in the incidence of cases of chronic non-suppurative middle-ear disease, but this is balanced by an increase in the cases of acute suppuration, due to influenza, so that the gross total of cases of middle-ear disease is unaltered. Fortunately,

* Read in the Section of Laryngology and Otology at the Annual Meeting of the British Medical Association, Edinburgh, 1927.

however, acute suppuration seldom leads to deafness. There is, therefore, a diminution in the number of cases of adult deafness, and this decrease should be progressive, owing to the increased frequency with which tonsils and adenoids are removed in childhood.

RADIOGRAPHY IN MASTOID DISEASE.*

BY

STEPHEN YOUNG, M.B., Ch.B.Glas.,

Surgeon to the Out-patient Department for Diseases of the Throat and Ear, Glasgow Royal Infirmary.

This paper is based on the study of the radiographic pictures of over 500 cases, normal and abnormal.

Before dealing with the radiographic study of the mastoid, it is necessary to consider the normal mastoid development at the various ages and the normal mastoid structure. According to Wittmack's researches, the development of the temporal bone may be divided into three periods: (1) Formation of the tympanum, epitympanic recess, and the mastoid antrum, continuing to the end of the first year. (2) Formation of mastoid cells from these three cavities, which ceases between the fourth and the sixth year. (3) Further formation of cells, which continues throughout life.

Cheatle's researches go to show that the acellular structure of the infantile mastoid is diploëtic tissue, the only cells in addition to the tympanic antrum being a layer on its outer wall. It is stated that this acellular type persists throughout life in 15 per cent. of people. In the second type (cellular or pneumatic) the diploë is replaced by air spaces which have extended from the middle-ear tract. Between the infantile acellular diploëtic mastoid and the cellular or pneumatic mastoid several intermediate varieties of bone are recognized. In the adult bone these represent an arrest of development corresponding with a definite age in the child. This is of special interest in the consideration of asymmetry in the mastoid and its possible etiology.

In the standard *x*-ray projection we can trace the gradual pneumatization and the approximate normal for the age. The standard projection used gives practically a lateral projection, and the following landmarks should be studied and recognized. We first of all recognize the external and the internal auditory meatus; just a little superior and posterior to this is located the mastoid antrum. Directly posterior to the canal at a variable distance is the groove for the sigmoid sinus. Passing downwards and forward through the mastoid process to the jugular fossa—below and in front of the mastoid tip—the sharp angle or knee of the sinus groove can be recognized, and it is especially important to note the anterior line of this groove. Below this is the tip, and just behind the canal is an opaque area forming the posterior meatal wall with the facial nerve underneath. Above the mastoid antrum and middle ear can be seen the tegmen of middle ear and antrum. The superior line of the squama may be indicated. In front of the meatus we have the temporo-mandibular articulation with the glenoid cavity and the condyle of the lower jaw. Frequently the emissary vein is seen as a worm-like shadow situated anywhere between knee and tip. The area enclosed between the posterior meatal wall in front, the tegmen above, and the anterior wall of the sinus groove forms roughly an inverted triangular area, with the tegmen as base; for descriptive purposes this has been called the triangular area.

Returning to the radiographic studies of the normal mastoid in children, this is found to correspond more or less closely with Wittmack's stages of mastoid pneumatization. (1) From birth to one year the only cell development is seen in the mastoid antrum, which occupies a more superior position to the auditory meatus than in the adult and is of comparatively large size. (2) From the first to the sixth year cell development begins and is confined to the triangular area previously described and forward towards the zygoma in some cases. (3) From the sixth year to the sixteenth we notice gradual cell development beginning posterior to the anterior sinus groove, starting first at the lower posterior part and tip. (4) The complete pneumatization extends eventually to the upper posterior part and permeates completely the mastoid process.

The pneumatic mastoid in the adult may show cell development corresponding closely to these four stages. Another feature of interest is that cells laid down early in the triangular area are smaller as a rule than those developed at the tip and posterior part of the mastoid later; this is well shown in some of the radiograms.

Symmetry of Mastoids.

By symmetrical mastoids is meant that they are either both pneumatic or both diploëtic in structure. Asymmetrical mastoids would thus mean a diploëtic mastoid on one side and a pneumatic mastoid on the other; a case revealing an extensive pneumatization on one side with a very limited pneumatization on the other is not in the true sense an illustration of asymmetry, but rather symmetrical mastoids with arrested pneumatization on one side.

In their investigations Beck, Law, Reverchon, and others report consistent symmetry. Turner and Porter, in their examination of 1,000 crania, report 12 per cent. asymmetrical. Plum suggests that some of these might possibly indicate arrested development. With regard to the present series, in the normal cases I have examined I have found the mastoid processes consistently symmetrical. Where there was no ear complaint and the *x* rays revealed apparently asymmetrical mastoids, investigation has shown without exception the presence of either a mastoiditis or a healed condition, often previously unknown to the patient. This apparent or false asymmetry due to some previous pathological condition is a very common occurrence.

We now come to the question of the influence of an inflammatory process on mastoid development and thus indirectly on the question of asymmetry.

Macewen in 1893 stated that: "In chronic cases of inflammation of the mastoid an osteoplastic formation may be set up in the neighbouring bone which results in an eburnating sclerosis and an actual obliteration of many of the mastoid cells." This well expresses the old view regarding the sclerosed mastoid frequently found at operation.

Cheatle has more recently stated that in infancy, with the exception of the mastoid antrum and a few cells on its outer wall, the mastoid consists of diploëtic structure; further, that this so-called infantile type persists in 15 per cent. of people. Cheatle's researches tend to show that the sclerosis produced at first round the antrum is not the effect but the cause of the chronic suppuration, the acellular condition being thus primary. Wittmack, on the other hand, believes that hyperplasia of the mucosa with incomplete or arrested pneumatization is caused by the entrance into the tympanum of amniotic fluid, meconium, etc., during foetal life or at birth, or the entrance of vomitus during the first year of life. Wittmack's theory is supported by Pierce and others.

As I have already stated true asymmetry has not been found in the present series of cases—that is, apart from a previous pathological condition of the mastoid. In addition, I have not been able to find a case presenting normal ears with a sclerosed or ivory mastoid. Assuming Wittmack's theory to be correct regarding the production of the acellular type of mastoid, I have found the acellular mastoid to give the *x*-ray appearance suggesting a diploëtic mastoid rather than a sclerosed mastoid. Law in 1920 stated that it was impossible to distinguish between a sclerosed mastoid and a diploëtic one.

In the present series of films I have found that the appearance of a sclerosed mastoid is different from that of a diploëtic one. Further, cases of chronic mastoiditis on *x*-ray examination reveal all degrees of thickness of cell trabeculae, in some cases so thick that the mastoid cells are almost obliterated. This thickening is shown also in the cases of healed mastoiditis, whereas in the normal pneumatic mastoid the trabeculae are of a very uniform degree of fineness and the cells distinct and well marked.

* A paper communicated to the Section of Laryngology and Otology at the Annual Meeting of the British Medical Association, Edinburgh, July, 1927.

Taking the cases where a healed mastoid was found it can be demonstrated that the inflammatory process has undoubtedly produced an arrest of pneumatization on the affected side as compared with the healthy, the subsequent growth of bone in these healed cases being apparently diploëtic in structure as distinct from the ivory sclerosis found in some cases of chronic mastoiditis. This arrest of pneumatization in the adult I have been able to demonstrate as corresponding to the various stages previously mentioned in the normal pneumatization process in the child.

Taking the present series as a whole, normal and abnormal, I have found true diploëtic acellular mastoids to be comparatively rare, whilst those showing arrested development are of frequent occurrence. I have come, then, to the following conclusions from the cases studied:

(1) That normal mastoids are symmetrical.
(2) That they are of two types: (*a*) pneumatic or (*b*) diploëtic. Apart from chronic mastoiditis, never of the ivory sclerotic type.
(3) That arrest of pneumatization occurs following otitis media with mastoid involvement; many cases of apparent asymmetry are due to this cause.
(4) That the normal pneumatic cases far outnumber the normal diploëtic.

The Value of X Rays in Mastoiditis.

Kuttner as recently as 1912 stated that radiology did not furnish any assistance in otology. Winckles and Voss, on the other hand, in 1907 reported *x*-ray findings verified by operation. Plagmann, by means of a negative, was able to distinguish whether the disease was confined to mucosa in an acute case or whether there was some bone caries. Law in 1920 produced a descriptive atlas, including operation findings and technique. Plum in 1924 gave a record of *x*-ray procedure with confirmed operation findings.

It would be well to emphasize at once that, as in other branches of medicine and surgery, the diagnosis should not be attempted on *x*-ray findings alone, but, if properly studied and applied, we have a very valuable addition to our other clinical means of investigation.

At the throat and ear clinic of the Royal Infirmary, Glasgow, we have employed this method to all possible cases of mastoiditis, acute and chronic, coming to operation; it has thus been possible to compare the *x*-ray and operation findings. The initial difficulties were many.

If radiography is to be of any use as a routine method several things are, in my opinion, essential. The first essential is to decide on a *standard position*. Next it is necessary to become familiar with the normal appearances at different ages, and the various results of pathological processes. Good plates, indeed very good plates, are essential. The following have been selected: (1) A large series of normal mastoids, child and adult. (2) A series of pathological conditions in children. (3) The conditions seen in a series of 50 operations with the *x*-ray findings noted. (4) A series of cases illustrating other conditions—for example, simple acute otitis media, furuncle of meatus, etc.

Plum (1924) has suggested that an *x*-ray photograph does not reveal whether disease is active or healed, and that only repeated negatives during the process of disease give indication of active lesion. It is undoubtedly the case that, taking negatives alone, this may be true, and also that repeated negatives may be considered in acute cases, but, if the other clinical observations are combined with a single *x*-ray plate, a fairly accurate opinion may be given regarding conditions in the mastoid. It has also been stated by various authors that *x*-ray findings in cases of chronic suppurative otitis media are of less value than in acute cases. It has been possible, however, to demonstrate from the present series many interesting and suggestive changes in chronic cases verified by operation.

X-Ray Appearances in Normal Mastoids.

The characteristics depend on the type being examined. A radiogram of both sides should be obtained on the one plate for comparison; this is especially valuable in unilateral cases. If bilateral, the surgeon must compare with what he would assume to be the normal condition at the age of the case under review.

Dealing first with the mastoid with arrested cell development at some period under 6 years of age, we can distinguish the following features: (1) the auditory canal; (2) the posterior wall of the bony meatus; (3) the sinus groove, especially the anterior wall; (4) the line of the tegmen of the antrum; (5) the tip of the mastoid process. The only cell development noticed here is in the triangular area. The sinus groove is usually well seen, but the antrum is indistinct; the remainder of the mastoid is usually diploëtic in structure.

The Diploëtic Mastoid.—This shows all the features of the above except cell development in the triangular area, the mastoid throughout being of uniform fine meshwork, much finer than in the smallest pneumatic mastoid. Only a very good film will show the true nature of the diploëtic structure.

The Pneumatic Type.—Primarily, although the size of the cell may vary in individuals, the smallest cells are found in the triangular area, whilst the largest are in the tip and posterior to the sinus groove. These latter cells are developed later. The cells frequently run well forward into the zygoma. Another important point in the normal pneumatic mastoid is the character of the lines indicating the anterior sinus groove. This line sometimes shows clearly, at other times only faintly. This depends on the thickness of the sinus plate compared with superimposed cells. It has already been stated that normally the mastoids of any particular case are symmetrical. This not only applies to the type of mastoid but to the size of the cells; where there is a large cell or collection of cells in one situation, a similar collection is usually seen in the same situation on the other side. This makes it possible to distinguish sometimes between an area of cell development and an area of caries with bone absorption. The size and position of the emissary vein should be noted as a matter of interest.

The Sclerotic Type.—This I have only found associated with a chronic process in the mastoid; often no cell outline can be distinguished, but, as sclerosis is not always uniform, areas of caries with absorption can be noticed. The anterior sinus groove is often well marked.

From the series of *x*-ray findings followed up to operation I have been able to verify the following conditions:

1. Hyperaemia of mastoid cells in acute otitis media without obvious mastoid disease.
2. Acute mastoid inflammation.
3. Purulent mastoiditis.
4. Caries indicated by breaking down of cell trabeculae in pneumatic mastoids, or areas of bone absorption in previously diploëtic or sclerosed mastoids.
5. Exposure of sinus; extradural perisinus abscess.
6. Exposure of middle fossa dura with low middle fossa.
7. Cholesteatoma.
8. Sclerosis with often a sinus groove unusually far forward. This condition gives more or less definite *x*-ray appearances.

Mild Acute Mastoiditis.—The diseased side in pneumatic mastoids shows a faint haze covering the mastoid, as compared with the clear outline of the healthy side. The cell trabeculae are still distinctly seen. I have found that this haziness is especially marked in the region of the mastoid antrum. A case presenting these features with free drainage should be left alone providing other signs do not indicate operation. Where, because of cessation of discharge, increase of pain in the ear, with elevation of temperature, etc., operation has been undertaken, the mucous lining of the cell is found to be oedematous, a collection of haemorrhagic serous fluid is found in the mastoid antrum, but there is an absence of caries or pus. Sydney Lange records this degree of mastoid involvement in 50 per cent. of cases of apparently simple acute inflammatory otitis media.

Acute Purulent Mastoiditis.—In these cases the cells are filled with purulent discharge; there is a greater degree of cloudiness of the cells, especially in the triangular area, obscuring the antrum; the sinus groove is well marked. Such an appearance may be associated with symptoms or signs indicating operation; I have found beads of pus throughout the mastoid, the mucous membrane oedematous, and, on opening the antrum, a collection of pus; there is no breaking down of the cell trabeculae.

Severe Purulent Mastoiditis, Acute or Chronic.—The pneumatic mastoid here appears entirely blurred. Areas of apparent rarefaction consequent on the breaking down of cell trabeculae or caries indicate the necessity for operative measures, and at operation extensive caries may be found with collection of pus especially surrounding the antrum or towards the tip; these areas, however, may be found at any point in the mastoid. Up to the stage of caries the line of the anterior sinus groove is intact and more visible than in the normal side; but where the sinus plate is affected the intact line becomes broken, and at operation the sinus is seen to be exposed and sometimes covered with recent granulations—granulations and pus being found throughout the mastoid. An *x*-ray plate with the above findings indicates immediate necessity for operation apart from the presence or absence of such signs as temperature, mastoid oedema, tenderness, etc. In several operation cases I have been able to demonstrate abscess formation in acute and chronic suppurative mastoiditis in the *x*-ray films. In these cases the cell trabeculae break down and numerous cells appear to have coalesced, the outline of the abscess being sometimes clearly marked. Frequently in these cases the lines of the tegmen and of the anterior sinus groove become broken or blurred, and operation has revealed extradural, middle fossa, and perisinus abscess. A common situation for abscess formation is in the large tip cells.

The edges of an area of bone formation corresponding to an abscess are often blurred and hazy, but readily distinguishable. It has been noted in some cases that the area of maximum tenderness corresponds accurately to the area showing bone absorption. Cholesteatoma formation occurring in chronic cases sometimes presents a diagnostic picture of an indefinite haziness; this is usually surrounded by an area of increased density, the surrounding bone having undergone osteoplastic change resulting in ivory-like sclerosis. The condition is most commonly noted in the triangular area surrounding the antrum. The density of the shadow found in cases where operation has revealed ivory sclerosis has, in my experience, never been seen in the mastoid process of the normal ear; in the presence of a chronic discharge, indeed, this type of change is a distinct indication for a radical mastoid operation, as there is little chance of a permanent cure.

There are several other conditions where *x*-ray evidence is of great assistance in diagnosis:

(1) *Marked Dermatitis or Eczema.*—Frequently cases occur of eczema or dermatitis of the external auditory canal with stenosis; in these, because of their chronicity, a middle-ear origin is suspected. The *x*-ray picture in some of these cases pointed directly to the mastoid as the source of infection, whilst in others a beautiful healthy pneumatic mastoid has been found, absolutely excluding mastoid disease.

(2) *Furunculosis.*—With post-aural infection and oedema the *x* rays have again given valuable diagnostic assistance and sometimes prevented a mastoid operation. In these cases a haze is apparent over the mastoid, but there is no indication of caries. The employment of routine *x*-ray examination of mastoids of all cases of otitis media enables us to decide whether conservative measures—for example, removal of polypi, ionization, douching, drops—are likely to prove satisfactory. I have found in this way cases with chronic aural discharge, but no other symptoms where radiography has revealed cholesteatoma or dural exposure.

Conclusions.

1. Mastoids are normally symmetrical.
2. Mastoids are usually pneumatic, occasionally diploëtic.
3. Nothing has been found to disprove Wittmack's views of the origin of the diploëtic mastoid.
4. Pneumatization proceeds in a more or less definite manner in children normally; mastoiditis, mild or severe, tends to arrest cell development, resulting in the persistence in adult life of a partially pneumatized mastoid process.
5. If reinfected this arrested or infantile type of mastoid may develop a sclerotic character, and is probably more liable to chronicity.
6. A dense sclerosed mastoid has not been demonstrated without at least evidence of a pre-existing otitis media.

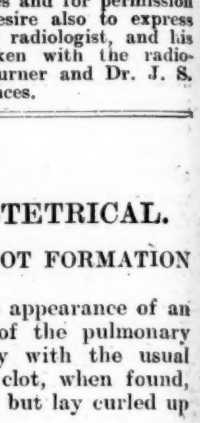
This investigation has been carried out in the throat and ear clinic of the Royal Infirmary, Glasgow, under the charge of Mr. James Harper. The operations were performed by Mr. Harper, Dr. Leitch, and myself. I am indebted to Mr. Harper and Dr. Leitch for the operation findings in their cases and for permission to include them in the present series. I desire also to express my indebtedness to Dr. Bruce MacLean, our radiologist, and his staff, for the very considerable trouble taken with the radiograms. I am also indebted to Dr. Logan Turner and Dr. J. S. Fraser of Edinburgh for very valuable references.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PULMONARY EMBOLISM WITH KNOT FORMATION IN THE CLOT.

The accompanying photograph shows the appearance of an embolic clot found at the bifurcation of the pulmonary artery in a patient who died suddenly with the usual symptoms of pulmonary embolism. The clot, when found, was not spread out as in the photograph, but lay curled up at the bifurcation of the pulmonary artery; it extended a little into the right pulmonary artery, and a very little into the left pulmonary artery. The only true knot, however, was the one illustrated. The total length of the clot is almost 17 in.



A possible clue to the knotting is provided by the unusual site of origin of the clot. This was in the left axillary vein. A more angled path to the pulmonary artery had thus to be followed than is the case with the more common clots coming by way of the inferior vena cava from the pelvic or leg veins. The clot may thus have been retarded for some time when only part had passed the tricuspid valve, and the portion in the ventricle may have been knotted by the repeated contraction of that chamber, particularly if the part still lodged in the tricuspid orifice was causing some incompetence at the same time, and so modifying the blood currents in the ventricle.

The history tends to support this view, for the patient lived for nearly an hour after the pain in the chest and respiratory distress commenced, and then died suddenly. He was a man aged 56, and was suffering from an abscess of the left axilla, resulting from neglect of a slight wound of the hand. The wall of the axillary vein was inflamed and surrounded by pus. The femoral and pelvic veins were healthy.

I have to thank Mr. J. Marnoch, professor of surgery, Aberdeen University, for the notes of the case, and Professor Shennan, of the Pathological Department, for permission to publish this report.

John Gray, M.B.

Pathology Department, Aberdeen University.

ACUTE VERONAL POISONING, WITH LOBAR PNEUMONIA AND BEDSORES.

The following case of veronal poisoning which occurred in my practice in Valparaiso, Chile, this year, four months before I left for England, seems worthy of record in view of the large dose taken and the subsequent complications which delayed recovery.

I was summoned urgently one night at about half-past ten to see a woman who had taken an overdose of veronal, and about fifteen minutes later I found her deeply unconscious. She had been given some hot water and had vomited a little brownish fluid. The pulse was regular and the colour good; the pupils reacted normally. I washed the stomach out with warm water containing sodium bicarbonate until the solution became clear, the first returns being brownish and containing mucus. Two tablespoonfuls of sodium sulphate in half a pint of water were left in the stomach. Hypodermic injections of strychnine, digitaline, caffeine, and camphorated oil were given at regular intervals.

At 7 o'clock the next morning the patient had a prolonged rigor and during the day there was a rise of temperature; the bowels acted well. The stomach was again washed out in the evening, when the temperature was over 102°. Signs of consolidation were found at the right base; the pulse had increased in rapidity, and the respiration was short and quick. On the second morning there was definite lobar pneumonia involving the lower two-thirds of the right lung; there was no cough, but tracheal rattling was very distressing, and the mucus had to be removed at frequent intervals from the throat and mouth. The patient was fed through a tube at eight-hourly intervals, and oxygen was administered every half-hour for about five minutes each time. The urine, which contained a trace of albumin but no sugar, was drawn off every eight hours. At midday 25 c.cm. of polyvalent antipneumococcal serum were injected. That evening the temperature was over 104° and the pulse 150; the patient was kept in the sitting position.

On the third morning her condition was grave, and a red patch had appeared on each buttock. The temperature fell somewhat in the evening, but rose again the next morning, when some slight movements of the eyelids were evident and there was a little resistance in passing the stomach tube. During the following night some movements of the facial muscles began and the patient became able to swallow a little water. Though still unconscious on the fifth day, the patient was able to swallow more easily and the lung began to clear. Later in the day she began to talk wildly, and it was not until the following evening that she became more or less rational.

On the seventh day the dry rub of pleurisy was evident behind her left shoulder, but this disappeared in a few days, as also did the pneumonia. On the eighth day a buttock abscess was incised under ether. On the eleventh day giant urticaria developed, with intolerable itching; the pain and rash were relieved by hot alkaline applications and occasional subcutaneous injections of 2 to 3 minims of adrenaline.

After another four days the patient was obviously convalescent, except for the bedsores. The sloughs gradually separated, leaving large cavities on each buttock, which extended for four or five inches in the direction of the ischio-rectal fossae, daily boracic baths being much appreciated by the patient.

The amount of veronal taken by the patient was estimated at 15 grams, or 225 grains, but about 25 grains were probably left in the cup used. Complete unconsciousness lasted for a period of 113 hours, after which it took the patient at least two clear days to realize fully the gravity and nature of her illness.

The quantity of the drug taken, with subsequent recovery, is in itself worth recording, but the various complications add further interest to the case. The bedsores would most probably have been avoided had trained nursing been available, but it is possible also that so large a dose of poison circulating in the system only requires a determining factor, such as pressure for a certain number of hours, to induce gangrene of the tissues. So far as I can remember the patient weighed only about 7 to 7½ st.

London. S. M. WELLS, F.R.C.S.Ed.

A TREATMENT OF MORPHINISM.

IT is universally maintained that the eventual outlook for the morphine addict who submits to treatment is very bad indeed, the rate of permanent recovery being variously estimated as between 10 and 15 per cent. Furthermore, the process of withdrawal is reputed to be exceedingly painful, in whatever manner it is performed.

I am now able to give the after-history of ten consecutive patients who were treated by a somewhat elaborate technique, whereby the usual discomfort is avoided. With this series the average duration of addiction was eleven years, and all except two had been treated unsuccessfully by other methods. The average length of treatment was exactly thirty days, of which about half were devoted to withdrawal. The treatment of the various individuals was spread pretty evenly over the three years ending last June, and the result is accurately known in every instance.

Of these ten patients, nine have remained without any sort of relapse since they were dealt with. The tenth had to face prolonged domestic unhappiness, and morphine was restored as the only means of preserving sanity. I am not aware that any other method can show results which are at all comparable.

A full description of the technique appeared in the *Practitioner* of January, 1927. The reduction of morphine is covered by two waves of overdosage, by drugs of the atropine group and by luminal respectively, in such a way that morphine is timed to be completely withdrawn just before the maximum doses of luminal are administered. Use is made of the "special mixture" of Lambert (tinct. belladon. ᵰe, liq. ext. hyoscyami et xanthoxyli āā ʒj). Lambert's method aims at the rapid withdrawal of morphine, and produces a mild delirium which in some measure deadens the sufferings of the patient. The present method secures a much higher tolerance of atropine, which appears to be the factor which renders withdrawal painless. Indeed, it is not too much to say that as skill is developed in meeting the various emergencies which may arise, the majority of patients can pass through the treatment without an hour of uneasiness. A very important factor in attaining this result is the cautious manipulation of the doses of the habit-forming drug. Small supplementary amounts are kept in readiness so that the patient is not allowed to suffer. In practice, a certain degree of atropine tolerance seems to enable a given level of withdrawal to be painless; as tolerance develops this level gradually sinks, and the patient remains perfectly comfortable so long as rapidity of reduction is kept within this limit. While such elaboration of technique adds greatly to the trouble expended upon each individual case, I claim that the patient's comfort is well worth securing. It would seem, also, from the after-history of the small series referred to, that the more important question of permanency is very favourably influenced.

London, W.1. G. LAUGHTON SCOTT, M.R.C.S.

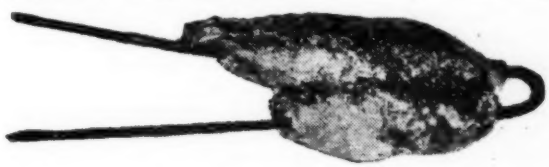
FOREIGN BODY IN THE BLADDER.

THE following case of a foreign body with secondary phosphatic calculus imbedded in the urinary bladder is worthy of record.

A girl, aged 11, was sent to me for cystoscopic examination with a tentative diagnosis of renal tuberculosis.

She had been seen four weeks previously by her doctor, to whom a history of three months' incontinence of urine was given. He found her suffering from pyuria and albuminuria, and, as no improvement took place under medical treatment, a tuberculous infection was suspected and a further investigation was advised.

The child appeared to be very ill and toxic. I could obtain no definite history from her or her mother as to how the condition started. The child struck me as being unusually shy and secretive, and of rather dull intellect for her age. The temperature was 103°, the pulse 34, and the respirations 36. Micturition was frequent, but painless; complaint was made of a dull aché in both lumbar regions, and there was tenderness on palpation over the hypogastrium. The urine was foul and alkaline; albumin and pus were present in large quantity, and casts were seen under the microscope.



I suspected a foreign body of some nature in the bladder. X-ray examination revealed a hairpin encrusted with phosphatic material, with the points directed towards the base of the bladder (see photograph). I removed the hairpin through a suprapubic incision, and washed out a considerable amount of foul phosphatic debris. Suprapubic drainage and daily lavage cleared up the condition, and the wound closed in three weeks. The urine was then quite clear, free from casts, and normal in every way.

GUY CHAMBERS, F.R.C.S.,
Honorary Surgeon, Isle of Wight County Hospital.

THE USE OF QUININE BIHYDROCHLORIDE IN OBSTETRICS.

SINCE Dr. S. Gordon Luker recommended the use of quinine bihydrochloride in the treatment of puerperal pelvic infection I have employed it with success, though the number of cases is too small to justify any dogmatic assertion. Since the injections cause no after-effects this treatment should follow, I think, every difficult labour. I append a short note of two cases.

A primipara, more than 30 years of age, was delivered after a difficult instrumental labour, in which I had no help of any kind. Twenty-four hours later she had a rigor, severe pains in the head and abdomen, and a temperature of 104°. I gave one injection and the temperature had fallen to 99° by the next day. There was no further trouble and she was able to suckle her child.

A primipara, not seen till she was in labour, was found to have fibroids which obstructed delivery. Craniotomy was performed under most adverse conditions. One injection of quinine was given immediately after delivery. The temperature rose to 99°

and the pulse to 100, on the fourth day, but the patient was perfectly comfortable throughout the puerperium and was able to rise on the ninth day.

Other instances could be cited. Since the injections are painless I venture to think that it is well worth while to employ this treatment whenever it has been necessary to intervene in the course of labour. The dose is 5 grains and the injection should be made into muscle.

Llanbister, Radnorshire. O. Steel, L.M.S.S.A.

Reports of Societies.

RECENT ADVANCES IN TOXICOLOGY.

At the meeting of the Medico-Legal Society on October 27th Sir William Willcox, the new President, delivered his address from the chair, which was chiefly a review of recent advances in toxicology.

After some reference to the history of the Society and the value of its work he pointed out how necessary it was in forensic medicine to eliminate all possible risks of fallacy in the scientific tests employed, and paid a tribute to the work done in chemistry, physical chemistry, and physics, saying that most of the new methods and tests used in medico-legal science were really the application of principles already worked out in the pure sciences. But in forensic medicine the practicability of a test had also to be considered. Scientific research from time to time elaborated new and important tests, but their practical application in medico-legal investigation was not always easy. The recent work on the examination of alcohol in the urine as a guide to alcoholic intoxication, for example, was important, but it was not easy to see how this work could be applied in police-court cases.

With regard to toxicological advances, he instanced, in the first place, the work on arsenic. One of the greatest advances in toxicology was the electrolytic test for the detection of minute quantities of this poison. This superseded the use of zinc, which had been necessary in the earlier tests, and which always left a doubt in the mind as to the possibility of arsenic appearing from some impurity in the metal. Platinum electrodes were now employed, or, in further modifications, said to be improvements, lead, mercurialized lead, or mercury electrodes, but in any event the electrodes were now entirely above suspicion. The Seddon case was the one in which the electrolytic test was first used in determining quantitatively the amount of arsenic in the organs of the victim. In the Armstrong case, which was also one of acute arsenical poisoning, the interest arose from the fact that the arsenic would never have been suspected as the cause of death in the case of Mrs. Armstrong, who had already been dead for a year, had not Armstrong made an attempt to poison another person, who was given an approximately fatal dose of arsenic, and whose symptoms recalled to the doctor those which he had observed in the case of the woman a year previously. On exhumation it was found that a dose much larger than the fatal one had been taken twenty-four hours before death, and from its distribution in the body it could be said almost exactly when the fatal dose was given. Sir William Willcox also mentioned that, five years ago, he was consulted by an Indian official who had come home on account of an obscure illness which could not be diagnosed in India. He cut off some of his hair and had it analysed, and it was found to contain traces of arsenic. The man was really suffering from arsenical poisoning, and the occasion of the poisoning was traced back to a date two months previously, before he left India, when his cook, under the influence of political agents, had endeavoured to assassinate him.

Sir William Willcox then went on to refer to the arsenobenzol compounds. He said that since Ehrlich's discovery of salvarsan in 1910 innumerable arsenobenzol derivatives had been introduced, but none of them had proved superior in therapeutic value to the original salvarsan. The compounds had become definitely established as the most effective remedy for the treatment of syphilis, and had proved of great value in the treatment of other diseases, such as relapsing fever, also. But the introduction of this powerful remedy was followed by some instances in which the drug was found to have a toxic action, and investigations showed the necessity for close inquiry into the purity of the preparations. He next spoke of liver poisons, and mentioned a fatal case of toxic jaundice which came under his observation during the war. The patient had worked at an aeroplane factory at Hendon. On examining the conditions obtaining at that factory, it was found that tetrachlorethane was one of the substances in which cellulose was dissolved. Experiments carried out on rats showed conclusively that this was the substance which must be incriminated; the rats submitted to the vapour showed incipient toxic jaundice, with degeneration of the liver cells, and definite signs of hepatitis. Immediate modifications were made in the ventilation of the factory, which reduced the danger, and shortly afterwards it was found that amyl acetate could be substituted altogether for tetrachlorethane, and there were no more cases of toxic jaundice.

One of the striking advances in toxicology had been the improvement in methods for extracting alkaloids from viscera. It was realized to-day how important it was to do this work in low temperatures; if the work was done at a temperature above blood heat the alkaloid was destroyed by hydrolysis. It was by attention to these details that in the Crippen case hyoscine was extracted from the remains, which had been buried for six months. He also touched on lead treatment for cancer, introduced by Professor Blair Bell. The value of this treatment was still *sub judice*, but a good deal of light had been thrown thereby on the toxic action of lead, and views on lead poisoning had to some extent been modified.

Turning to new drugs, Sir William Willcox said that there was a tendency to-day, when a person was ill, instead of giving him good, old-fashioned remedies, to select for use some of the new and much vaunted drugs of foreign manufacture with which this country was flooded, and unfortunately these drugs were allowed to supersede the old and well tried remedies. The best example was the barbituric acid and veronal group of compounds. Their name was legion, and they were introduced on the market with glowing advertisements, and were said to be perfectly harmless. He was not going to say that these drugs were of no value, because if used properly they were of value, but they were dangerous and toxic drugs, and he had endeavoured to call attention to the need of care in their use. From 1905 to 1925 there were 257 cases of fatal poisoning from these drugs, and there appeared to be no sign of diminution, but, on the contrary, the numbers were likely to increase. Numerous cases of addiction to these drugs had also been recorded. Then, again, there were the new organic compounds for all sorts of conditions and diseases which were poured into this country, and many of which were really powerful toxic agents. He thought the British public ought to be protected to a greater extent than it was. He was informed on good authority that fine chemical and proprietary remedies were imported into this country in enormous quantities from abroad, with little restriction as regards duty, and no other restriction, whereas, on the other hand, similar products of British manufacture were subjected to such hampering restrictions and duties as to render the exportation of British remedies impossible.

A drug recently employed was thallium acetate, which had the remarkable property, in carefully calibrated doses, of removing from the body all the hair which was under the control of the sympathetic system. He had seen serious effects ensue from taking a full dose of this drug, and it seemed as if the possibility of idiosyncrasy and severe toxic symptoms must arise. Was it wise to employ so powerful a drug in full doses for diseases which were not mortal? With regard to physiological principles used therapeutically, insulin was a very powerful substance, of which only a minute quantity had to be used under most perfect control. The question of the toxicological detection of substances of this class, adrenaline and so forth, for forensic purposes had not yet arisen. The toxicological detection of bacterial toxins for forensic purposes might be a field of work for the toxicologist of the future.

In conclusion, Sir William Willcox touched upon other advances in forensic medicine apart from toxicology. Advances had been made in the detection of blood stains,

and it was now possible to say from an examination of a stain from what human group, as regards agglutinating properties, the blood had originated. In wounds from firearms, chemical analysis of the projectile used now enabled one to say, by examining the marks inside the barrel, which left a definite impression on the bullet found, whether the discharged bullet was or was not fired from a particular pistol. The application of ultra-violet light in forensic investigations promised to be of great value. By this means the fluorescent properties of certain substances often served for their immediate detection, and different kinds of paper, for instance, which were indistinguishable by ordinary light, revealed their differences under ultra-violet rays.

MEDICAL BILIARY DRAINAGE IN GALL-TRACT DISEASE.

At the meeting of the Section of Medicine of the Royal Society of Medicine on October 25th Dr. Vincent Lyon of Philadelphia described the technique and usefulness of medical biliary drainage in gall-tract disease, illustrated by a cinematograph film. Dr. A. F. Hurst was in the chair.

Dr. Lyon said that many questions of diagnosis and the most appropriate plan of management would remain unsettled until the existence of cholecystitis was recognized at an earlier stage. Disease of the gall tract and its treatment had been a controversial shuttlecock, and closer co-operation between surgeons and clinicians was necessary. There was a stage in the disease when surgery was unnecessary and perhaps harmful; a stage when it was indispensable, perhaps even for the saving of life; and a stage in which surgical efforts had been exhausted, and non-surgical measures alone were of service to the patient. There was need for better judgement in the selection of each patient for surgical, non-surgical, or combined treatment, and for better team work. Dr. Lyon then illustrated, with the aid of moving pictures, the passing of the duodenal tube and the procedure attending biliary drainage and duodenal lavage, including the microscopical examination of the specimens of bile obtained. He also claimed that, apart from its value in the diagnosis of some forms of cholecystitis and associated gall-tract disease, the procedure of non-surgical drainage of the gall bladder by the use of instillations of magnesium sulphate into the duodenum had a therapeutic value in a large number of conditions. He declared that biliary tract drainage, when properly performed, was valuable in the treatment of relapsing cholangitis, particularly when a cholecystectomy had failed to relieve; the condition could often be cured without resorting to secondary operations, provided that there was no evidence of residual stone in the common or hepatic ducts. When proper judgement was used in the selection of cases, many patients with quiescent cholelithiasis might be restored to satisfactory health by this means. In some cases of gall-tract disease and quiescent cholelithiasis when surgical intervention had been precluded the non-surgical drainage had been substituted with satisfactory results. Another condition which could be checked by this treatment was persistent post-operative hiccup and vomiting, which ceased, sometimes after the first few hours of drainage, and always in a day or two. Simple catarrhal jaundice usually cleared up promptly in from two to seven days after the obstructive blocks of mucus had been removed. Gall-bladder and duct catarrhs with subinfection could often be cleared up, and more serious pathological conditions prevented. The cholecystitis which was a complication of acute fevers often responded favourably to the treatment. There was also a large group of patients from whom the gall bladder and appendix had already been removed, and who suffered from hepatic or intestinal toxaemia and gave vague histories of various disorders; in these patients, very frequently, medical drainage, colonic irrigation, and dietetics secured much better results than calomel or other drugs. In association with other measures some patients with chronic neuritis and arthritis had been greatly improved, particularly joint cases in which there was some infection from the liver or intestine. In the group including typhoid carriers this treatment had also been found helpful. Dr. Lyon instanced several other conditions as likely to benefit, mentioning that in a few cases of non-traumatic epilepsy, especially in young adults, seizures had been greatly lessened in frequency and severity when this method was tried, although various drugs usually employed in such cases had failed to relieve. The fundamental truth to be realized was that gall-tract disease was not always—perhaps not often—a clinical entity confined solely to the gall bladder and bile ducts. Often it involved the liver, pancreas, duodenum, intestine, as well as the cardio-vascular system. The crux of the therapeutic problem lay in the proper selection of patients in the various stages of gall-tract and associated disorders for whom proper surgical, non-surgical, or combination methods were adopted. Dr. Lyon described certain vicious circles which operated in the continued ill health or relapses of the victims of chronic gall-tract disease, and the reasons which had led him, after having previously used the method of drainage only occasionally, with results which stopped short of success, to apply it intensively, under suitable control.

Dr. A. F. Hurst said that for some years past he had been very much interested in Dr. Lyon's method from the point of view of diagnosis; he had gained the impression that it was of the greatest value, and enabled a non-surgical mild type of cholecystitis to be recognized when it had hardly been discernible before. This was quite a frequent condition, and in his view one of the three most common causes of chronic dyspepsia. He doubted if Dr. Lyon's method of treatment had as wide an application as was suggested. Some cases of catarrhal jaundice cleared up in from two to seven days, even though this treatment had not been employed. With regard to the less radical methods of non-surgical biliary drainage, Dr. Hurst added, it appeared to be quite clear that the gall bladder would contract after magnesium sulphate had been given by the mouth, and in many of the milder cases of chronic cholecystitis it seemed to him that the results of treatment of that kind had been admirable. With regard to the cause of infections of the gall bladder, his own experience was that the vast majority were due to aberrant forms of *B. Coli*; *B. staphylococcus* was hardly ever found. This, however, was contrary to some observations at the Mayo Clinic.

Dr. J. W. McNee said that Dr. Lyon's method, while largely followed in America, had made slow advance in this country, where there had been some advance in diagnosis, but not in treatment. He thought that there was no doubt of the importance of the method in diagnosis, but he was inclined to think that it did not possess the therapeutical value which Dr. Lyon had supposed. In certain cases it was, no doubt, useful, but the method which he himself had employed was simply the administration of magnesium sulphate by the mouth.

Dr. F. A. Knott described an investigation into the diagnostic value of this method which had extended to more than 400 cases. The results had shown that as a test it was thoroughly practicable. Just over three-fourths of the specimens were noted as satisfactory—that is to say, it was possible to obtain contrast specimens of the duodenal contents, which were relatively free from bile, and of the gall-bladder bile (dark, green) after magnesium sulphate. It had not been possible in this investigation, however, to distinguish, as Dr. Lyon had done, between different sorts of bile; the bacteriological tests were made on what was assumed to be gall-bladder bile. Out of these 411 cases, according to the clinical notes, just over 100 cases of cholecystitis were detected.

Dr. A. Cawadias said he had used the method rather extensively for diagnosis; he had tried it also in treatment, but without much success, and the patients finally asked for surgical intervention. A combination of magnesium sulphate and peptone had furnished good results clinically, and was a simple method which could be tried in all these conditions. Injections of pituitrin were also said to have a certain action in provoking evacuation of the gall bladder.

Dr. T. Izod Bennett thought that Dr. Lyon deserved thanks for reasserting the importance of the catarrhal factor in gall-bladder pathology, which had been overlooked in recent years. The lymphatic side of the infection had

been emphasized too much, and Dr. Lyon had done well to demonstrate that pathological changes taking their origin within the ducts and spreading upwards played a very real part in the picture of liver and gall-bladder disease. Dr. Lyon had also made clear the importance of a more thorough drainage of the capillary tree than was usually accomplished. His own experience was that in the milder cases of cholecystitis very great apparent relief followed the oral administration of magnesium sulphate, olive oil, and other stimulants; so far back as the days of the Romans the therapeutic advantages of magnesium sulphate under such conditions were recognized. The spas of Europe were perhaps the best testimony that a very definite benefit was to be derived from magnesium and possibly other salts in dyspeptic conditions.

Dr. Lyon, in reply, said that in the Jefferson Hospital many patients had pleaded to be kept on the biliary drainage treatment, even after it had been definitely decided that they ought to be treated surgically, because of the symptomatic improvement which made them unwilling to undergo operation. It was true that magnesium sulphate by the mouth had been given for centuries, yet many of the patients who came to the clinic in America were persons who had spent long periods in European spas. Olive oil also had been given therapeutically for many years by the mouth.

THE EPIDEMIC CONSTITUTION.

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine, held on October 28th, the President, Dr. S. Monckton Copeman, F.R.S., in the chair, Dr. E. W. Goodall read a paper entitled "The epidemic constitution."

Dr. Goodall remarked that recent years had seen a revival of a doctrine which had apparently died out in this country not long after the middle of the nineteenth century. The doctrine of epidemic constitutions was not seriously discussed in the early days of the Epidemiological Society (now the Section of Epidemiology and State Medicine of the Royal Society of Medicine), although it was cursorily alluded to in 1863 and 1874 by Inspector-General Robert Lawson, and in 1893 by Dr. J. F. Payne, who expressed himself as being "very sceptical as to the reality of any such phenomena." The latest reference in an English textbook of medicine appeared to be that of Bristowe in 1864. Recently Sir William Hamer and Dr. F. G. Crookshank had resuscitated the doctrine, and the epidemic constitution had been referred to in an annual report of the chief medical officer of the Ministry of Health. The particular phrase "epidemic constitution" seemed to be due to Sydenham, although Sydenham, to some extent, derived the conception from Hippocrates. It was, however, an error to seek to identify the epidemic constitution with the "something divine" of Hippocrates. Hippocrates's word was *katastasis*, and, unfortunately, the English word "constitution" had been used by translators to render not only *katastasis* but also *phusis*. In Dr. Goodall's view Hippocrates meant by the *katastasis* of a season the state brought about by the concurrence of certain weather conditions. He invoked no mysterious agent to account either for diseases or epidemics. Galen made no advance upon the Hippocratic teaching, and although Fracastor provided us with another instrument of research when he very clearly explained the modes by which infection could be spread, no notable advance in our knowledge of the epidemic behaviour of diseases was due to him. Sydenham divided the prevalent epidemic diseases into two groups—the stationary and the intercurrent fevers; the former depended upon the epidemic constitution. The existing constitution not only determined what should be the stationary fever, but impressed its characters, which were manifest especially in the stationary fever, upon such intercurrent fevers, and even other diseases, as happened to be prevalent at the time. Thus, during one period—1667 to 1669—the constitution was variolous, and so small-pox was the stationary fever; but amongst the intercurrents prevalent during that constitution was a certain continued fever, and, towards the end of the period, a diarrhoea also. In accordance with the doctrine both these diseases exhibited some of the features of small-pox, without, however, the eruption. This was Sydenham's account of the manner in which an epidemic constitution made itself felt, but what he meant by the term "epidemic constitution" could not be ascertained; it was a vague something over and above the more obvious causes of disease, the presence of which was necessary to bring about an epidemic. Sydenham's new points were that the nature of the constitution varied from time to time, that it determined the prevailing epidemic and imprinted its characters on concurrent minor epidemics, and even on diseases which were not necessarily epidemic at all. In this conception Sydenham was to some extent anticipated by Galeazzo di Santa Sofia in a book published in 1514. The most prominent modern supporters of the doctrine, Sir William Hamer and Dr. F. G. Crookshank, had stated their views briefly but clearly in a work entitled *Influenza*, edited by Dr. Crookshank and published in 1922. According to Dr. Crookshank, by "epidemic constitution" "we really mean to imply all the correlated symptomatic disorders and their consequences manifested in a community or population during a period of time that is not arbitrarily selected, but has natural duration and limitation and during which prevalences and occurrences of distinctive nature arise." In Dr. Goodall's opinion this was rather a definition of what Sydenham meant by the stationary and intercurrent fevers, a prevalence of diseases brought about or influenced by the constitution, than a definition of the constitution itself. It appeared to Dr. Goodall that upon this Dr. Crookshank's view was much the same as Sydenham's, and consequently vague. Both Sir William Hamer and Dr. Crookshank, "who started as followers of Sydenham, have far outstripped their master, and have now set out in quest of the cause not only of an epidemic, but of the cause of the cause of an epidemic, the cause of the veritable epidemic constitution itself." In Dr. Goodall's view the revivalists had not helped us much towards understanding what Sydenham meant by the epidemic constitution, nor provided a satisfactory substitute. Dr. Goodall had asked himself whether in his own experience the characteristics of the prevailing stationary fever were impressed upon the intercurrents. In particular, he had paid special attention to the cases admitted to the North-Western Hospital at Hampstead during the winter and spring of 1924-25. Influenza was the stationary fever of the period; whooping-cough, scarlet fever, diphtheria, mumps, rubella, and chicken-pox were the intercurrents amongst the infectious diseases. He had found no evidence whatsoever that these last-mentioned diseases bore any trace of influenza, and that experience was the experience of former years.

Dr. Goodall rejected the doctrine of the epidemic constitution as set forth by Sydenham and the revivalists. He thought that the genesis of an epidemic was not dependent upon a single cause, nor upon one outstanding cause aided by minor causes, as Sydenham surmised. An epidemic was the result of the interplay of several factors, the kind and number of which varied with each disease. Any conception we might now have of an epidemic constitution or its equivalent could not be that of a single agent. Dr. Goodall thought the term "epidemic constitution" should be abandoned altogether and replaced by Peters's "epidemic potential," with Professor Topley's extended definition—namely, "the balance of interacting forces which tends towards the occurrence of an outbreak of disease."

Sir William Hamer found Dr. Goodall's paper stimulating, and recalled the respect in which Sydenham held the Dr. Goodall of his own time, perhaps an ancestor of his critic. Sir William regretted that Dr. Goodall had not devoted more of his great clinical and epidemiological skill to the study of the interrelations of the various illnesses associated in time with influenza, and he pointed out that from the literary point of view there was not one Sydenham but really three Sydenhams, expressing the different developments of Sydenham's experience.

Professor M. Greenwood agreed with Dr. Goodall that the phrase "epidemic constitution" was infelicitous; he also agreed that Sydenham's theory was of no value. He thought, however, that the attempts of Sir William Hamer

and Dr. Crookshank to show an order in the sequence of epidemics were significant, although, in his view, it was not likely that such attempts would be wholly successful until more had been learned, by an application of the experimental method to herds of shorter-lived animals than man, of epidemiological problems less complex than those of human epidemics.

Professor W. W. C. Topley was in general sympathy with Dr. Goodall, but thought that Sir William Hamer's criticisms of bacteriological interpretations had been very useful.

Dr. J. D. Rolleston referred to some historical applications of the term "epidemic constitution." Fleet Surgeon W. E. Home thought it was really impossible to form any clear idea of what medical writers of the eighteenth century really did mean, and that the use of vague, indefinable terms had done, and might do, considerable harm.

The discussion was closed by the President, who congratulated Dr. Goodall and the Section on the paper and the discussion it had provoked, and Dr. Goodall briefly replied.

Reviews.

ENDOCRINE GLANDS.

The combination of early physiological work, clinical experience, and wide reading has enabled Dr. W. Langdon Brown to write a clear and philosophical handbook full of suggestive ideas on the difficult subject of *The Endocrines in General Medicine*.[1] Attractive from its potentialities and therefore open to rash speculations in the armchair, the therapeutic use of endocrine preparations is much in need of such an authoritative and well considered opinion, which strikes a judicious mean between the keen clinician and the cautious if not agnostic physiologist. Thus while sceptical about the uses of thymus, pineal, prostate, placenta, and mammary gland, he is favourably impressed with the future utility of gonad extracts. The methods of preparation and administration of the extracts, which have such an important bearing on the results, are, of course, discussed, and there are useful comments on the dosage and therapeutic scope. The endocrine balance and the pluriglandular syndromes are naturally mentioned, and there is a useful table showing the types of disturbed endocrine balance in childhood; thus overactivity of the anterior lobe of the pituitary is held to be responsible for gigantism and for hemi-hypertrophy, whereas its deficiency accounts for the Lorain type of infantilism. But in the second edition, which will certainly be called for soon, a more extended discussion in a special chapter of that difficult problem of the pluriglandular syndromes would be a welcome addition.

The chapter with the rather arresting title "The retarding glands" deals with the thymus and pineal, which delay sexual maturity in the interests of more prolonged somatic development, presumably by influencing in some way the endocrine balance, though there is not any evidence that they provide an internal secretion. Prophylactic measures in children thought to have status lymphaticus are suggested, and the rare syndrome of macrogenitosomia praecox characterized by premature psychical, physical, and sexual development is ascribed to pineal defect. Elsewhere the adrenal cortex is regarded as a retarding agent in normal childhood, defect being responsible for progeria, and overaction, as in hyperplasia and tumours, for virilism. This delicate discrimination between the contrary effects of normal and pathological activity of the cortex on development is of considerable interest. The clinical manifestations of hypothyroidism receive full attention, and reference is made to the rheumatic character of some of them, the explanation being that they are really due to myxoedematous infiltration of ligaments and fasciae.

There are many other interesting points to which attention might well be called, but enough has perhaps been said to show that this is a book to read.

[1] *The Endocrines in General Medicine.* By W. Langdon Brown, M.A., M.D., F.R.C.P. Modern Medical Monographs, edited by Hugh Maclean, M.D., D.Sc., F.R.C.P. London: Constable and Co., Ltd. 1927. (Demy 8vo, pp. vii + 144. 7s. 6d. net.)

THE SCIENCE AND PRACTICE OF SURGERY.

To attempt to cover the whole of the science and practice of surgery in two volumes of reasonable dimensions is an ambitious project. In their book on *The Science and Practice of Surgery*,[2] Mr. W. H. C. Romanis and Mr. Philip Mitchiner, both of St. Thomas's Hospital, greatly daring, have essayed this task with the intention of placing before the student a textbook sufficiently comprehensive to enable him to negotiate the higher examinations of surgery, and at the same time providing the medical practitioner with a work of reference.

They have very nearly brought off a great success, for the book is well balanced, and includes chapters on such subjects as diseases of the eye, *x* rays, anaesthesia, as well as very useful articles on inflammation, sterilization, bacteriology, and immunity.

The various sections, many of them written by specialists in the several branches, present a good deal of uniformity of style, and what perhaps is more important, the amount of room devoted to individual subjects bears a reasonable relation to their respective importance.

It is, of course, obvious that in an enterprise such as this insuperable difficulties must present themselves in steering a course between the dogma which is necessary and desirable for students and the more elastic discussion of pros and cons that one expects to find in a work of reference. On the whole the balance between the two is well maintained, leaning if anything a little in the direction of dogma, which no doubt is wise, as student readers may be expected to be in the majority.

With regard to arrangement, the general principles of surgery are considered in the first volume, and in the second regional diseases and their treatment are carefully described, each section being prefaced by an account of the surgical anatomy and the physiology of the region or organ under consideration.

The illustrations are extremely numerous, but vary in quality, for some are especially good while many are distinctly bad. It is difficult to understand the value of retaining such examples as Figs. 2, 15, 21, 26, 27, 50, 86, 94, in the first volume, and several others of similar character in the second.

No doubt they will be improved in a later edition, which will certainly soon be called for. Probably the authors will take that opportunity of amplifying the description of such subjects as post-operative thrombosis, gun-shot wounds of the bones, Cushing's work on the pituitary, the injection treatment of varicose veins, the treatment of hernia by fascial grafts, and other sections that appear to have received less adequate consideration than might be desired by at any rate the post-graduate student. No doubt also the authors will by that time have informed themselves that their undue pessimism as to the value of radium in the treatment of cancer of the tongue (p. 197) is hardly justified by the facts.

There is a good table of contents in each volume and an excellent index, but there is no indication in either volume as to what is to be found in the other; the value of the complete work might be considerably enhanced were a composite index for the whole book to be included in each volume, together with a table of contents showing the general scope and arrangement.

"THERAPEUTIC MALARIA."

The employment of an artificially induced malarial infection as a therapeutic agent has become so widespread in recent years that such an account as Dr. Rudolf has given of its technique, results, and possible complications in his *Therapeutic Malaria*,[3] will be widely welcomed.

Only a few years ago general paralysis of the insane was regarded as a necessarily fatal disease with a duration,

[2] *The Science and Practice of Surgery.* By W. H. C. Romanis, M.A., M.B., M.Ch.Cantab., F.R.C.S.Eng., F.R.S.Ed., and Philip H. Mitchiner, M.D., M.S.Lond., F.R.C.S.Eng. Vol. I, General Surgery; Vol. II, Regional Surgery. London: J. and A. Churchill. 1927. (Roy. 8vo, Vol. I, pp. viii + 795; 666 figures, 9 plates; Vol. II, pp. viii + 565; 290 figures. 14s. net each volume.)

[3] *Therapeutic Malaria.* By G. de M. Rudolf, M.R.C.S., L.R.C.P., D.P.H., D.P.M. Oxford Medical Publications. London: Milford, Oxford University Press. 1927. (Demy 8vo, pp. xi + 223; 55 figures, 2 plates. 12s. 6d. net.)

generally, of from one to three years, a disease in which there was little prospect of betterment beyond the possible occurrence of a temporary halt in the march of its progress towards paralysis, dementia, and death. Since the introduction by Dr. Wagner-Jauregg of Vienna of malarial therapy a complete change has been wrought in the attitude of physicians towards this disease, and at the present day a case of general paralysis is one which requires and receives vigorous treatment, by far the most hopeful form of which is that by inoculation with benign tertian malaria.

Dr. Rudolf is an assistant medical officer at Claybury Mental Hospital, London. It was in the summer of 1923 that his chief, Dr. G. F. Barham, decided to introduce malarial therapy at this hospital—a time when this mode of treatment was still in its infancy. Dr. Rudolf has therefore had ample opportunity, of which he has made full use, to study the course of general paralysis as influenced by malarial infection, and to make observations of its sequelae over a length of years.

Dr. Rudolf, like, we believe, all others who have used this treatment, is of opinion that the earlier the case of general paralysis is treated the better the prognosis, and quotes Wagner-Jauregg as saying that if only early cases are treated nearly 100 per cent. of remissions can be obtained. Interesting evidence is also provided of the value of malarial therapy in tabes and neurosyphilis, and cases are quoted of syphilitic cerebral thrombosis treated at Claybury Mental Hospital with marked improvement.

It was to be expected that a method of treatment which had produced such striking results in general paralysis should be tried on other forms of mental disorder. Wagner-Jauregg had reported an early acute case of dementia praecox as apparently cured after treatment. Dr. Rudolf has observed that his cases of dementia praecox at Claybury, whilst showing temporary benefit as the result of this treatment, soon afterwards relapsed into their former state.

The author takes care, in discussing the mental changes that occur during the malarial treatment of general paralysis, to keep in mind the mental aspects of both diseases, malaria and general paralysis. Some patients developed auditory hallucinations after the fever, and these persisted for many months. Dr. Rudolf considers this to be due to the general paralysis and not to the malaria, although hallucinations are considered rare in the untreated disease. The mental and physical and pathological changes occurring as a result of malarial treatment receive full consideration. The author's discussion of the technique employed is succinct and reliable. The various safeguards against the occasional dangers of this therapy are fully stated.

The whole book provides an admirable summary of all the important recent work on this subject, and is enriched by two coloured plates and numerous diagrams.

"RECENT ADVANCES IN ANATOMY."

The character of the contents of *Recent Advances in Anatomy*,[4] by Professor H. Woollard, now of Adelaide, is rather unexpected, for it deals, as will be seen, mainly though not quite exclusively with microscopical structure; the preface, indeed, confesses that many aspects of anatomy—such as the racial and constitutional, anthropology, large areas of comparative anatomy, and much embryology—are either omitted or mentioned only incidentally. Much that is usually taught in physiological courses is set forth clearly and attractively in this well written volume—for example, the chapter on oestrus, ovulation and menstruation, the account of the origin of the blood cells, and the description of the cerebro-spinal fluid. The first chapter, entitled "microdissection," deals with the instruments employed in the dissection of individual cells and then with mitochondria, the recently discussed Golgi apparatus, and the chromosomes. This chapter, like all the others, has a short but useful list of references for the reader who desires to follow the subject to its original sources. The second chapter is devoted to a description of tissue culture, and in another the morphogenesis of nerve fibres is considered. In the chapter on "growth centres and organizers" some of the problems recently investigated by experimental embryologists, especially in connexion with the eye, are set out and illustrated by pictures taken from Spemann's papers.

The reticulo-endothelial, or, as it is preferably called, the macrophage, system is fully described; its characteristics are well marked—vital staining, phagocytosis, and amoeboid movement—but its functions are admitted to be constantly expanding. The anatomy of the extra-pyramidal system is given in some detail, with an account of S. A. K. Wilson's work on the fibre connexions of the corpus striatum and Elliot Smith's researches into the comparative anatomy. The symptoms of extra-pyramidal disease are summed up as muscular rigidity unaccompanied by any change in the reflexes or in sensation, and involuntary movement ranging from tremor to athetosis. In the chapter on protopathic and epicritic sensation the subject, as represented by Sir Henry Head's opinions in 1920, is reviewed in the light of the more recent publications of Professor Stopford, Dr. E. D. Adrian, and Sir John Parsons.

The last chapter deals with x-ray anatomy, and first points out the number of bony variations which may imitate fractures. The association of hypothyroidism with pseudo-epiphyses, atypical epiphyses, and accessory tarsal elements is cautiously discussed. Reference is made to the light thrown by radiology on the position of the normal stomach, and the existence of two forms of stomach—the hypersthenic or highly placed and the asthenic or very low stomach—depending on bodily constitution. This constitutional influence holds sway as regards the other abdominal contents, and the same types of position have recently been shown to exist in the gall bladder by F. Davies of University College, London.

[4] *Recent Advances in Anatomy.* By H. Woollard, M.D. London: J. and A. Churchill. 1927. (Demy 8vo, pp. vii + 302; 73 figures, 4 coloured plates. 12s. 6d.)

TEXTBOOKS OF MATERIA MEDICA.

New editions of two very well known textbooks of materia medica have just appeared. These are the nineteenth edition of Hale-White's book[5] and the thirteenth edition of that by Bruce and Dilling.[6] So many generations of medical students have been familiar with these volumes that it is unnecessary to say anything regarding their general scope and quality. In point of seniority Bruce and Dilling has the advantage, since it first appeared in 1884, and the first edition of Hale-White appeared eight years later. In the case of both books the new editions include numerous important new drugs. Sir William Hale-White has introduced sanocrysin and the lead treatment of cancer; in both cases, however, he has adopted the wise policy of a cautious reserve in describing the results obtained with these drugs. In the case of protein therapy he has given a favourable verdict for its use in hay fever, but has been less certain of its value in asthma.

It is six years since the previous edition of Bruce and Dilling appeared, and hence the present volume contains a long list of new drugs, of which insulin is the chief. Novasurol, sanocrysin, Bayer 205, tryparsamide, and mercurochrome are the chief new synthetic drugs included. Some other new uses or new drugs now mentioned are the morrhuates in tuberculosis, carbon tetrachloride in ankylostomiasis, and the chaulmoogrates in leprosy; carbon dioxide, ethylene, acetylene and propylene in anaesthesia, butyn and borocaine in local anaesthesia, malarial therapy in neurosyphilis; scarlet fever antitoxin, protein therapy, and ultra-violet light treatment. This list of novelties shows how thoroughly the volume has been brought up to date, and it also indicates how important are the advances that have been made in recent years in therapeutics. Moreover, the subjects in the list indicate the remarkable variety of the forms of therapeutics that have been introduced in recent years.

As has been already stated, both books are so well known that it is superfluous to proclaim their general merits, but enough has been said to indicate that the new editions have been brought completely up to date.

[5] *Materia Medica, Pharmacy, and Therapeutics.* By William Hale-White, K.B.E., M.D.Lond., etc. Nineteenth edition. London: J. and A. Churchill. 1927. (Fcap. 8vo, pp. viii + 712. 10s. 6d. net.)

[6] *Materia Medica and Therapeutics.* By J. Mitchell Bruce, C.V.O., M.A., LL.D. (Hon.) Aberd., M.D.Lond., F.R.C.P., and Walter J. Dilling, M.B., Ch.B.Aberd. Thirteenth edition, revised. London: Cassell and Co., Ltd. 1926. (Fcap. 8vo, pp. xv + 686; 6 figures. 10s. 6d. net.)

BIOLOGICAL CONSTANTS.

The first volume of *Tabulae Biologicae*,[7] edited, with the assistance of ninety contributors, by C. Oppenheimer and L. Pincussen, was published about two years ago, and, together with the second, was reviewed last year (1926, vol. i, p. 832). The fourth and last volume, which has just appeared, contains a mass of information concerning inheritance and variation.

The first 113 pages are devoted to the enumeration of the chromosomes in the different species of plants and animals. This is followed by a review of the chief known examples of Mendelian inheritance; it includes a summary of the known examples of the inheritance of diseases and malformation in man. The volume concludes with an index to the whole work. This index, which occupies 200 pages, is, of course, one of the most important features of a work of reference of this nature. It has been carefully prepared; the key words are given in German, English, and French, whilst the names of species are cross-indexed under Latin and German.

Tabulae Biologicae will be found to be of very great value by all workers in biological sciences, for it provides an easy method of finding out the chief information that is available on any subject. Its special merit is that it covers all the biological sciences. Many important biological problems are of interest to several branches of science, and this work makes it possible to find out what has been done on a given problem, not merely by workers in one science, but by all workers in biological science. The information in it cannot, of course, compare in its accuracy with the physico-chemical constants collected in such a work as that of Landholt-Börnstein, but this is not the fault of the compilers, and the collection of this mass of material ought to encourage the determination of biological constants with greater accuracy.

The book is fairly dear, for the volumes are not sold separately and the set costs £12 10s. unbound. Since, however, the volumes consist almost entirely of tabulated matter, their preparation must of necessity have been very expensive. Moreover, it must be remembered that the publishers offered the set at the very cheap price of £5 to those who had sufficient confidence to subscribe to the work in advance.

NOTES ON BOOKS.

The work on *Preventive Pediatrics*[8] by Dr. Borden S. Veeder, professor of clinical pediatrics at the Washington University School of Medicine, forms the fourth volume of the system of clinical pediatrics edited by Dr. Royal Storrs Haynes. The book is divided into three sections, devoted respectively to the growth and development of the child, including chapters on physical and mental growth, nutrition and diet, hygiene and education; the prevention of disease, with consideration of the morbidity and mortality in infancy and childhood; and methods which include pre-natal clinics, infant welfare, the care of pre-school children, and school hygiene. An appendix contains specimens of weight charts, record forms, and a bibliography.

When Sir Jonathan Hutchinson suggested, or reintroduced, to parents the plan of recording in a book their infants' progress, he probably did not foresee the literary and artistic refinements to which the plan might lead. In *The Little One's Log*[9] Lady Erleigh has compiled a handsome volume with charming illustrations by Mr. E. H. Shepard. The foreword by Dr. Eric Pritchard is adorned by the inevitable stork, which drops an infant, lying curiously in a kind of inverted uterus, down a chimney pot. The book is arranged with alternate pages of letterpress and record. The information in the letterpress seems sound; and the record makes provision for such minutiae as "Baby's First Curl." A bibliography of books on the care of the child, and suggestions for the child's library completes the volume. If mothers find the time to keep these records, doubtless they will, as Dr. Pritchard says, meet with their reward.

[7] *Tabulae Biologicae.* Edited by C. Oppenheimer and L. Pincussen; ninety contributors. In four volumes. Vol. IV. Berlin: W. Junk. 1927. (Sup. roy. 8vo, pp. vi + 829; 7 maps. £12 10s. the four volumes, not sold separately.)

[8] *Preventive Pediatrics.* By Borden S. Veeder, M.D. New York and London: D. Appleton and Co. 1926. (Roy. 8vo, pp. x + 213; 9 figures. 16s.)

[9] *The Little One's Log.* By Eva Erleigh. With foreword by Dr. Eric Pritchard. London: S. W. Partridge and Co. 1927. (Cr. 4to, pp. 95; illustrated. 7s. 6d. net.)

PREPARATIONS AND APPLIANCES.

A Ligature Applicator for Tonsillar and Other Deeply Seated Vessels.

Sir James Dundas-Grant, K.B.E., M.D., F.R.C.S., sends the following description of an apparatus to facilitate the ligature of tonsillar and other deep-seated vessels. It consists essentially, he writes, of a glass or metal tube of about four inches in length and a metal carrier, somewhat longer, with a notch at one end. The ligature, preferably of catgut (not long soaked), is doubled and pushed through the tube by means of this carrier (Fig. 1). The projecting loop of the ligature is then secured by means of a pledget of gauze and the wire guide removed.

FIG. 1.

FIG. 2.

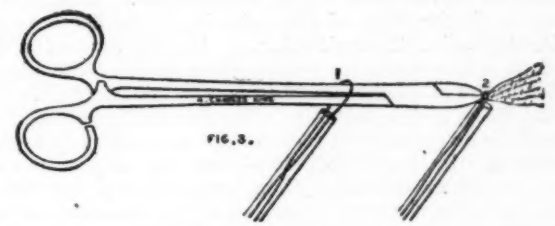


FIG. 3.

One loose end of the ligature is then marked by means of ink or a knot in order to distinguish it. A half-knot is then made in the other loose end and the marked one pushed through it; the half-knot is then tightened (Fig. 2). We thus have a sliding knot round the marked end. The ligature loop (which may be considerably longer than is shown in the illustration) is passed over the forceps with which the bleeding vessel has been clipped and is pushed down by means of the tube till it encircles the vessel. If the marked external end is then pulled, the loop on it will pass down the tube and grip the vessel (Fig. 3). The carrier and tubes have been made for me by A. Charles King, Limited, 34, Devonshire Street, W.1.

ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the case committee fifty cases were considered and £648 was voted to forty-four applicants. Below is a summary of some of the cases relieved.

Widow, aged 67, of M.D. who died in 1894. Her only income is 10s. a week in respect of a son killed in the war. The responsibility of the home falls on a son aged 35, but at the present time he is only earning £2 a week, after being out of work for some time. Applicant has had many money loses, and she has to keep her daughter at home to look after herself and the cottage (rent of cottage 10s. a week). Voted £24 in quarterly instalments.

Daughter, aged 52, of M.R.C.S. who died in 1907. On the death of her father she took a boarding house, which she was obliged to sell up in 1925 owing to ill health. In June this year she took another house; has let unfurnished rooms, retaining two for herself to carry on a sewing business. Voted £25 to meet rates and to buy some furniture for her room.

Widow of L.R.C.P. who died in 1926. She tries to support herself by envelope addressing, which rarely brings in more than 10s. a week. Total help given £35, and £26 voted in quarterly instalments. This grant is supplemented by the Royal Medical Benevolent Fund Guild, which gives 10s. a week.

Widow, aged 59, of L.R.C.P. who died in 1904. Her only income is rent from a house which amounts to £65 after deducting expenses for repairs. Rent, including fire and light, £40 per annum. Asks for renewal of grant as her income is insufficient to meet her expenses and increased rent. Previous help £10. Voted £10 in two six-monthly instalments.

Daughter, aged 64, of M.R.C.S. who died in 1890. Up to 1922 supported herself as a lady's companion, but owing to ill health had to give up work. Income from investments amounts to £52 per annum. Relations give £4. Applicant does not pay any rent, but £5 for rates. Voted £15 in four quarterly instalments.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

LARYNGECTOMY FOR CANCER OF THE LARYNX.

Semon Lecture by Mr. Lionel Colledge.

The Semon Lecture, under the auspices of the University of London, was delivered in the Barnes Hall of the Royal Society of Medicine on November 3rd by Mr. Lionel Colledge, surgeon to the Ear and Throat Department of St. George's Hospital, who took for his subject "The present position of laryngectomy for cancer of the larynx."

Mr. Colledge said that laryngectomy had been applied to cases of extrinsic cancer of the larynx, really pharyngeal cancer—that is, to cases in which the growth had originated on the aryepiglottic folds or epiglottis—or combined with partial excision of the pharynx to the post-cricoid carcinoma of women, and to growths arising in the fossa pyriformis.

For the first class of case—growths of the aryepiglottic folds and epiglottis—if an operation was advisable a pharyngotomy was generally more suitable, for such tumours were situated in the pharynx, and the principle so persistently advocated by Mr. Trotter of adequate exposure and removal of the growth rather than of any particular organ must be followed. In the second class—post-cricoid carcinoma in women—it was not necessarily imperative to sweep away the front of the neck, including the larynx, in order to excise the epithelioma. In the case of a lady, aged 38, after resection of the lower part of the pharynx and upper end of the oesophagus, the resulting defect was replaced by a flap of skin. The larynx remained intact and the open gutter was re-formed into a gullet by a plastic operation. In the third class—tumours of the pyriform fossa—no other operation than laryngectomy was feasible, and a portion of the pharynx, usually a complete segment, must be sacrificed at the same time. This operation of Gluck left the patient in such a condition that a plastic operation must be devised afterwards to re-form the anterior wall of the pharynx.

The performance of laryngectomy upon such cases brought discredit on the operation, and induced Bryson Delavan to state some seventeen years ago that up to that time total laryngectomy had added nothing to the sum total of human life. Statistics and case reports showed that no sufficient distinction was drawn between cases of excision limited to the larynx and those in which it had been combined with a partial excision of the pharynx. For example, in the first case of laryngectomy for cancer, reported by Billroth in 1873, the removal included part of the upper two tracheal rings, the cricoid, thyroid, and arytenoid cartilages, and the lower third of the epiglottis, while in a subsequent case, in a woman of 43, in addition to the entire larynx, the thyroid gland and part of the pharynx and oesophagus were removed. In Langenbeck's first case the hyoid bone and parts of the tongue, pharynx, and oesophagus were removed with the larynx.

A collection of such cases must inevitably be associated with a heavy operation mortality, but in spite of this the following analysis by Crile of cases reported between 1873, the date of Billroth's first operation, and 1901 tended to show a steadily diminishing death rate.

1873 to 1876 ...	12 laryngectomies	...	1 ultimate cure	=	8.33%
1876 to 1886 ...	108 ,,	...	21 ,, ,,	=	19.44%
1886 to 1896 ...	156 ,,	...	49 ,, ,,	=	23.82%
1896 to 1901 ...	30 ,,	...	20 ,, ,,	=	66.67%

Sendziack (*Die bosartige Geschwulste des Kehlkopfes*) gave a similar record of progress.

Recent reports concerning almost entirely cases of intrinsic cancer too advanced for excision of the growth by laryngofissure were far more encouraging, and indicated that in well selected cases, if the operation was performed in suitable circumstances by a surgeon who had made a special study of the technique and subsequent management of the case, the risk was now quite small. For example, Tapia (Madrid) had reported 107 cases with 5 deaths due to the operation, a mortality of less than 5 per cent. Moore and Portmann (Bordeaux) and Mackenty (New York) had each reported a series of 31 laryngectomies without a death, and Mackenty had later reported 102 laryngectomies with 4 deaths, all these four patients being diabetics. Crile had recorded 27 cases with 2 deaths, and various other short series similarly successful had been reported during the last ten years. The most striking figures were those of Gluck, who reported as long ago as 1899 that 23 out of 26 consecutive patients recovered, while in 1914 the total number of his simple laryngectomies amounted to 172, including a series of 72 cases without a death. Soerensen had recently reported the vast total of 788 laryngectomies from this clinic.

Allowing for the tendency towards optimism inseparable from large collections of surgical statistics, it might fairly be assumed that the mortality of the operation would be as low as 5 per cent. under the favourable conditions already mentioned, and it was hardly likely to fall much below this figure for so severe an operation. The occasional operator who had not made a special study of this type of operation was likely to be faced with a much higher death rate, and Hajek still considered that the mortality was really in the neighbourhood of 30 per cent. At the present time the operation was almost limited to cases of intrinsic cancer too advanced for any conservative operation—namely, laryngofissure or partial excision. In such cases the pharynx was not invaded, and only such a small part of it had to be removed as was necessary anatomically to excise the larynx; its closure presented no serious difficulty and there was usually no need for any plastic operation or the use of skin flaps. Many lasting cures in such cases could be claimed.

Such cases of advanced intrinsic cancer included the following types:

(*a*) Where the disease had extended at all widely to the subglottic region. There was a high percentage of recurrence after laryngofissure in this condition, owing to the difficulty of elevating the mucous membrane below the lower edge of the thyroid cartilage, and the ease with which the disease spread through the crico-thyroid membrane and crossed the middle line.

(*b*) Where the disease crossed the anterior commissure and invaded both vocal cords.

(*c*) Where one or both vocal cords were fixed and there was extension to the arytenoid region. Although fixation of one cord did not necessarily contraindicate laryngofissure yet such cases showed a large percentage of failures, and the question whether this operation or a partial or total excision of the larynx was the appropriate operation must be considered in each individual case. Hemilaryngectomy, or some modification of it, would result in a better voice and less social disability, but in many cases a permanent tracheotomy was necessary afterwards in spite of the attempt to preserve an airway through the larynx, and there was a greater risk of recurrence.

(*d*) Where both vocal cords, the ventricular bands, and the subglottic region were attacked and the larynx was choked with growth, no doubt could arise that laryngectomy was the proper operation.

(*e*) Where the disease had recurred after laryngofissure, though occasionally a second fissure or partial excision might succeed, laryngectomy was generally a more suitable operation and should be preferred to a lesser operation. Mr. Colledge had performed the operation seven times on patients who had previously undergone laryngofissure. Of these, four died within a year from another recurrence, one died from heart disease clinically free from any sign of cancer, and two only remained well six years and three years respectively after the laryngectomy. Recurrence after a laryngofissure, therefore, was not so hopeless as had been thought, but the outlook was clearly not very encouraging.

Besides the selection of cases there were certain other considerations, of which the recognition nowadays had influenced the results of operation beneficially.

The decision whether laryngofissure, laryngectomy, or some intermediate procedure was the appropriate operation for the case was of the utmost importance. This decision should be made before any operation was begun and not left to an exploratory investigation, because laryngectomy preceded by thyrotomy was a longer and more complicated operation than a deliberately planned laryngectomy. If any doubt existed it would generally be found that laryngectomy was required, but each surgeon would be swayed by his own views and experience—one inclined to save the

larynx wherever possible, another determined to place the risk of recurrence beyond every other consideration.

Recurrence after thyrotomy should be extremely uncommon, but no larynx should be sacrificed unnecessarily. On the other hand, the surgeon should not allow himself to be forced into operating on an unsuitable case on the plea that the disease was inevitably fatal.

The general condition of the patient was of the utmost importance, and might be a contraindication in a case otherwise suitable for operation. In this connexion it must be remembered that in elderly people the growth might be present for a long time before ultimately destroying life. In a case observed by Mr. Colledge the patient, who declined any form of operation whatever, survived four years from the time that the growth was first recognized. The most remarkable case was that of Gleitsmann, which had been ultimately recorded by Harmon Smith. A man, aged 33, came under observation with cancer of the larynx, proved histologically; the larynx was successfully removed thirteen years later by Dr. Brewer.

Age in itself was no contraindication. A medical practitioner, aged 73, passed through the convalescence without any complication or even rise of temperature, and returned to carry on his practice until his death some months later from an unexpected recurrence of the disease at the root of the neck. Generally, however, it was natural that the younger the patient the better was the operation supported. Three of Mr. Colledge's patients between the ages of 40 and 50 caused very little anxiety. Those of spare build with long thin necks were better subjects than fat people with short thick necks, and those addicted to tobacco, and especially alcohol, were invariably in a poorer position to withstand any severe operation, but particularly a laryngectomy.

Prolonged dyspnoea appeared to exercise a pernicious effect on the general nutrition and to cause wasting. Such patients withstood the effects of the operation very badly. A thin wasted man of 56, who had increasing dyspnoea, which would soon have rendered a tracheotomy essential to life, succumbed to sloughing and septicaemia in a week, although he was edentulous and in other respects a suitable subject.

In the operations of pharyngotomy and laryngectomy the wound in the neck was in direct communication with the mouth, and in overcoming sepsis the surgeon was presented with a problem entirely different from that in laryngofissure, in which it was comparatively simple to maintain an aseptic technique. Saliva, reaching any raw surface, produced a slough, so that if any leakage occurred healing by first intention was impossible, and could only take place by granulation after the sloughs had separated. The presence of infective material in the secretions of the mouth in these circumstances constituted a serious risk, and should an operation be undertaken without removing every septic tooth the wound would certainly be attacked by a severe streptococcal infection, and the patient might rapidly succumb to septicaemia or broncho-pneumonia. The state of the tonsils and accessory sinuses might play some part, and their condition should certainly be investigated; but it was the teeth which were all-important. The patients frequently had reached an age at which they were either already edentulous or infection of the gums and tooth sockets had begun.

The most satisfactory cases were those in which the teeth had been removed and two to three weeks allowed to elapse while the gums healed. The immunity seemed then to have reached its highest point, and it was possible to obtain healing by first intention. It was most important to allow a sufficient interval between the extraction of the teeth and the operation. The edentulous also were favourable subjects; but in course of time the immunity to mouth infections seemed to become lower. Patients with really good teeth and gums—an exceptional condition—did well, but there was always some sloughing. Patients with bad teeth and pyorrhoea should not undergo operation until they had been converted into Class I.

A preliminary tracheotomy must generally be avoided, but it might be necessary if the patient was exhausted by dyspnoea; not infrequently it had been previously performed, and sometimes in the high position immediately below the cricoid. A preliminary tracheotomy or a palliative tracheotomy should be as low as possible. If a low tracheotomy had been performed the larynx could be amputated from the trachea above the tracheotomy opening and the cannula left in position during healing.

Apart from tracheotomy, if the growth extended low down it might be necessary to remove a few rings of the trachea with the larynx to give an adequate margin below. If there had been no preliminary tracheotomy and the growth caused respiratory obstruction during the operation a laryngotomy tube introduced through the cricothyroid membrane would give relief. This was Botey's advice.

Mr. Colledge thought that the epiglottis should always be removed. It became useless and might cause difficulty in swallowing later on; but, what was more important, it might be the site of a recurrence. In no other operation was the subsequent care of the patient of greater importance.

The objections raised in connexion with the ultimate results of the operation concerned social, physical, and mental disabilities. It had been stated that speech was impaired or reduced to a whisper, that the neck was disfigured, and that there might be a predisposition to pulmonary disorders or even to the aspiration of foreign bodies into the air passages. Finally, the mental depression had been said to lead even to suicide. Actually most patients developed a useful pharyngeal whisper, and occasionally the pharyngeal voice might be of such a quality that there was no disability. Professor Burger, in 1925, had demonstrated such a patient, who was able to make himself heard all over the Barnes Hall, and Professor Burger described his researches on the manner in which this voice was produced. In another patient, on whom Sir Robert Woods had operated eight years previously, the voice, except for a slightly croaking quality, was perfectly natural, with a slight Irish accent; the patient produced it without difficulty or apparent effort by the vibrations of two bands, which seemed to correspond to the upper edges of the middle constructor.

Less fortunate patients were either satisfied with a whispered voice or could employ some form of phonatory apparatus. Patients did not take very readily to the use of an artificial larynx, but one had combined certain parts of the Tapia apparatus with other parts of the Mackenty-Western apparatus into an artificial larynx, which really suited him. With this he was able to carry on a very active professional life as the leading partner in a firm of architects.

There was no direct evidence that these patients were especially liable to pulmonary disorders, though Professor Moure had noted that out of thirteen patients who remained free from recurrence, four succumbed later to broncho-pneumonia. These patients were usually remarkably free from coryza, due probably to the abolition of nasal respiration. The entry of foreign bodies into the trachea did not seem to have occurred. The disfigurement of the neck was but slight, and the permanent tracheotomy was part of the price paid for the cure of the disease, which, unchecked, would eventually necessitate this operation in almost every case. It might be claimed, therefore, that if the patient was willing to undergo the operation, his ultimate condition was no worse than that of one suffering from any form of permanent and complete laryngeal stenosis, and the voice occasionally might be much better. The depressing effect on the mental state had been exaggerated; the patients were usually cheerful and active, and Mr. Colledge had not encountered the despair and melancholia leading to suicide described by some writers.

In a general way it might be concluded that the operation in properly selected cases was justified by its results, both immediate and remote, and that it was too often declined. When an operation was feasible Mr. Colledge did not think that there was a satisfactory alternative as a routine treatment. The use of lead and x rays had been disappointing. Radium was very apt to lead to necrosis of the laryngeal cartilages without eliminating the growth, but recently Mr. Harmer had reported improved results by employing small doses in needles over prolonged periods after resecting the thyroid cartilage to fashion a window.

In the first of these cases the result after three years had been much superior to a laryngectomy, leaving the man with a normal larynx, movable cords, and a good voice. Nevertheless, Dr. Thomas J. Harris had written in the present year, from a large experience of radium in laryngeal cancer: "Certainly if I had cancer and the condition was too far advanced for an operation I would prefer to endure the disease rather than to risk the uncertain results of radium treatment."

There would always be those who preferred to try radium, for the operation sometimes failed and radium might succeed.

THE STRANGEWAYS COLLECTION.

Pathology of Rheumatoid Joints.

Of additions made to the museum of the Royal College of Surgeons of England in recent years none is more worthy of record than that known as the "Strangeways Collection"—the preparations and specimens assembled by the late Dr. T. S. P. Strangeways during the years he devoted to the study of those human ailments which are accompanied by chronic and often painful changes in joints. The collection contains about 800 dissections and preparations with some 3,000 microscopic sections, all of which bear upon the pathology of joints undergoing changes of a rheumatic or rheumatoid nature. The circumstances in which Strangeways built up this collection were altogether of a peculiar kind, and deserve more than a passing notice.

Strangeways died on December 3rd, 1926, on the eve of completing his sixtieth year. Fame came to him late in life. During his last six years he made the Research Hospital of Cambridge the leading institution in this country for the study of living tissues cultivated and grown in artificial media. He drew round him a trained and enthusiastic band of workers, who now successfully strive towards the goal he had hoped to reach. At first sight it may seem that there can be no connexion between an inquiry into the articular changes of chronic rheumatism and a study of living tissues grown in artificial media, yet in Dr. Strangeways's case the one inquiry led on to the other in the most natural way.

Strangeways entered as a student at St. Bartholomew's Hospital in 1890, and in 1896, when 30 years of age, became a member of the Royal College of Surgeons. At his hospital he was brought, as were many others, under the influence of the late Professor Kantack, who was appointed to the chair of pathology in Cambridge in 1897. Strangeways followed him there, becoming his demonstrator, a choice determined not only by an inclination for laboratory work in preference to practice but also by a partial but increasing degree of deafness. In 1905, when he was made Huddersfield lecturer on pathology in Cambridge under the late Professor Sims Woodhead, he began to strike out on his own path in life. Coming to the conclusion that a pathologist could make headway only when he studied disease in the living as well as in the dead, he set about putting this idea into execution. He found that his friends Sir William Church, Sir Clifford Allbutt, and Professor Sims Woodhead were willing to help him and "cover" him; they became a "Committee for the Study of Special Diseases"—the particular diseases chosen for study being those which were accompanied by slow deforming changes in joints—chronic rheumatic arthritis in its numerous forms and degrees. Some £480 were raised by subscription; a house was taken; three beds were purchased and filled; a matron and nurse engaged, an *x*-ray apparatus installed, and the coal shed in the garden converted into a laboratory and museum. In 1906 another bed was added, and Dr. G. W. Nicholson was appointed research scholar and began his fruitful inquiries into those microscopic changes in bone and cartilage which mark the successive stages of chronic osteo-arthritis. Literature was ransacked for the best knowledge bearing on chronic articular disorders; beds were added; the Poor Law infirmaries of London were tapped for material; a research scholar in chemical pathology was appointed and another in bacteriology, all the time Strangeways giving his services voluntarily and shouldering the chief burden of obtaining financial support. In 1907 the hospital cost £256 to run; records of a thousand cases were accumulated and analysed; hundreds of specimens were dissected and examined, the most interesting being preserved as the nucleus of a museum. In 1908 funds became exhausted, but, nothing daunted, he appealed for a larger scheme—a special research hospital. He asked for £8,000 and obtained £846. His museum was becoming large, his records very numerous, and his family responsibilities were also growing, but these he blithely shouldered with his other liabilities. He had become convinced that arthritis deformans covered a multitude of disorders which had to be disentangled before any attempt could be made to relieve suffering by scientific means.

Sir Otto Beit, Sir Robert Brown, the Medical Research Council, and other friends came to his aid, and by 1912 £4,000 had been raised and a special research hospital built in Hills Road, a mile and a half from Cambridge. The executors of Sir William Dunn came to the financial aid of this voluntary worker. Thus it came about that in August, 1914, when the war broke out there was a hospital in Hills Road with beds for twenty-one patients, a well equipped laboratory, and a museum. By then full records of 4,000 cases of chronic arthritis had been accumulated and studied, 2,000 joints had been minutely examined, over 3,000 microscopic sections had been cut and studied, and over 800 preparations arranged on the shelves of the museum. Soon after the outbreak of hostilities the Hills Road Hospital was taken over by the military authorities. Strangeways, in the intervals of military service found time to prepare a typewritten account of the investigations he had made into the nature of osteo-arthritis and allied disorders. In 1917 the hospital reverted to its original purpose and Mr. Strangeways resumed his investigations. In 1918 he published an account[1] of the microscopic changes in joints affected by chronic changes, and another paper[2] in 1920 on the nourishment and growth of loose bodies in joints, a paper of great importance because, from the experience therein related, he passed, in a most natural way, into an altogether new field of inquiry. He found that the synovial fluid within a living joint was a medium in which particles of cartilage could grow, and that he had thus at his disposal an excellent method of studying the growth and nourishment of cartilage. From the growth of cartilage in the synovial fluid of joints it was an easy and natural transition to the cultivation of living tissues in artificial media. And thus it came about that a hospital established for the study of a special disease became launched as a progressive and fully equipped laboratory for the microscopic study of living tissues. To-day the work begun under Strangeways is being continued under Dr. J. A. Andrews.

After Strangeways's death those who were responsible for the upkeep of his collection of specimens had to determine how it could be utilized to the best advantage. The collection, with all documents relating to it, was offered to, and accepted by, the council of the Royal College of Surgeons of England. The council invited Mr. R. Lawford Knaggs, F.R.C.S., to make a critical examination of all the specimens and to compile a descriptive catalogue of the collection. The choice of Mr. Knaggs was particularly happy, for the chapters he devoted to arthritis deformans in his work *Diseases of Bone* mark him out as an authority in all that relates to the pathology of osteo-arthritis and rheumatoid arthritis. The task he has undertaken is not an easy one. Most of the specimens will require redissection and remounting; their histories have to be searched for in Strangeways's notes and writings. Ultimately there will emerge a series of specimens which will do justice to Strangeways's memory. It will be remembered that Strangeways recognized six types of arthritis deformans,[3] and all the specimens which he had marked as representative of his various types will be scrupulously preserved, but an examination of the type specimens shows that the criteria on which his classification was based are clinical rather than pathological. The microscopic specimens will be preserved as a separate collection and will be available for the use of all research students.

[1] British Medical Journal, 1918, ii, p. 623.
[2] Ibid., 1920, i, p. 661.
[3] Ibid., 1923, i, p. 762.

British Medical Journal.

SATURDAY, NOVEMBER 5TH, 1927.

CHRONIC SEPSIS AND THE PSYCHOSES.

In this year of the centenary of the birth of Lister, who by banishing post-operative sepsis made surgery safe for mankind, Sir Berkeley Moynihan, President of the Royal College of Surgeons of England, with the sympathy natural to "a physician doomed to the practice of surgery," has more than once drawn attention in eloquent terms to the notable advance made by the recognition of the existence and importance of medical sepsis. In so doing he has paid a well deserved tribute to the services of Dr. William Hunter in applying Lister's teaching to general medicine, describing him as having been for years "a voice crying in the wilderness." A like fate has attended many other pioneers, and it is always hard to foretell the bearings of a piece of research and to prophesy what far-reaching effects may eventually result from work undertaken solely to arrive at truth or directed to the solution of some special problem. After working at Leipzig on intraperitoneal transfusion of blood and the fate of the absorbed blood, the distinguished Edinburgh graduate Dr. William Hunter was elected John Lucas Walker student at Cambridge in 1887; he spent the three years of his tenure in beginning the investigation of the pathology and etiology of pernicious anaemia, and soon came to the conclusion that the haemolysis was due to the action of toxins absorbed from the alimentary canal. With rare persistence he followed this trail, and, pointing out the sore tongue, oral sepsis, and streptococcic gastritis, he arrived in 1900[1] at the conception of what has now become a commonplace—the influence of local infection on the body generally. In America the writings of Frank Billings of Chicago on "focal infection" followed these clear expositions of oral sepsis. The new term, though describing the same process, has a wider connotation, and it is now recognized that the original focus may arise in various parts of the body, in the Fallopian tubes or prostate among others, and that when it starts in connexion with the teeth it may establish a secondary focus elsewhere—in the tonsils, gall bladder, appendix, intestine, or even a joint—before the original focus is eliminated; by the establishment in this way of another active centre for bacterial activity the diagnostic connexion may be obscured and remedial treatment rendered difficult and disappointing. The influence of focal sepsis has been accepted in connexion with the etiology of acute rheumatism, and while altering our conception of that disease bids fair, through the removal of the faucial and pharyngeal tonsils and other foci, to combat the heavy toll of crippling cardiac rheumatism. But even so, and perhaps because of the inherent difficulties, medical antisepsis and asepsis have, it must be admitted, lagged much behind the example set by surgery.

As Dr. William Hunter points out in the paper (published at page 811) on chronic sepsis as a cause of mental disorder with which he opened the discussion in the Section of Mental Diseases at the Annual Meeting at Edinburgh, there are differences between what is ordinarily understood as medical and as surgical sepsis; medical sepsis is usually chronic and of a more complex character, the foci are often small, hidden, and not infrequently latent as regards symptoms. Experience is epigrammatically designated by Sir Berkeley Moynihan as "the name we give to our mistakes," and experience in hunting for these foci in cases of chronic arthritis or neuritis often proves that they are far from easy to locate. The interesting observations of Rosenow on the special selective action of certain strains of streptococci are quoted; but here, as was pointed out in Sir Berkeley Moynihan's contribution to the discussion in his paper on "The relation of aberrant mental states to organic disease" (p. 815), the qualities of the soil as well as those of the seed must be taken into account. It is, indeed, common to see persons with advanced oral sepsis with little or nothing in the way of secondary results, such as arthritis, fibrositis, and neuritis, and, as already mentioned, to see, on the other hand, patients with these disabilities in whom an infective focus is far to seek. The results of medical sepsis are now fully recognized as numerous and widespread; among them modifications of the endocrine balance and of the closely associated activities of the nervous system open up vistas presenting many problems full of interest and tempting speculation.

It is particularly fitting that at Edinburgh, so closely associated with Lister, there should have been in this "Lister's year" a discussion on the subject mentioned, and that it should have been opened by Dr. William Hunter—a graduate of the Northern Athens. Psychiatrists have not been backward in showing how great may be the influence of chronic infection in the production of mental disturbance, as is illustrated by the references to the remarkable experiences and results reported by Dr. H. A. Cotton of the New Jersey State Hospital, Trenton, where the number of discharges increased from 37 to 85 per cent. after the removal of oral and tonsillar infective foci. This subject was also raised in the discussion on the prophylaxis of mental disorder in the Section of Neurology and Psychological Medicine at the Bath meeting of the Association two years ago by, among others, Dr. P. Watson-Williams, who forty years before had recognized the importance of the toxaemic factor, but stated that in the larger proportion of cases of mental aberration the determining cause was not infection, thus agreeing with the wise warning of Professor Adolf Meyer of the Johns Hopkins University (quoted with approval by Dr. Hunter) not to regard all insanity as due to infection. Dr. Chalmers Watson, during the discussion, ascribed disseminated sclerosis and many acute and chronic mental disorders to septic foci, and spoke highly of the value of colonic lavage and Plombières douches. The experience of two superintendents of large mental hospitals provided cause for critical consideration of the opener's thesis; Dr. D. K. Henderson doubted the deductions drawn as to the dependence of psychoses on sepsis, and Dr. W. F. Menzies pointed out that the hypothesis of the septic factor in insanity was forty years old, that chronic sepsis was not more frequent in the insane than in the sane, and that the recovery rate had not been materially raised by antiseptic measures.

As he considers the incidence of chronic sepsis among the insane of this country to be much higher than in any other group of hospital patients, Dr. William Hunter pleads for early removal of any septic focus so as to prevent permanent and irreparable damage, and that, in order to achieve this new era of antisepsis in mental disorders and the cure of "septic psychoses"—a term approved by Dr. W. A. Potts—

[1] BRITISH MEDICAL JOURNAL, 1900, ii, 215.

each mental hospital should be as fully equipped for surgical and specialist work as it has hitherto been for medical and nursing care. Though obviously right in principle, this counsel of perfection must encounter financial difficulties which, in the present position of affairs, have to be taken into account; perhaps, however, these may be overcome by some arrangement with neighbouring hospitals, so that a system of team work not unduly costly can be successfully brought about. In the meanwhile, as recorded in our issue of October 22nd, a move in the right direction has been made at the new reception hospital for mental patients at Northampton.

THE WORLD POPULATION CONFERENCE.

For several days this autumn a large number of persons, including a fair proportion of scientific men of established reputation, were gathered together at Geneva to engage, in the words of the president, Sir Bernard Mallet, in "a full discussion on purely scientific lines of the theories, facts, and statistics relating to population problems." The *Journal* of the Conference, which is the only record of its proceedings at present available, is necessarily too concise to permit us to appraise the value of the papers read. Thus we should no doubt be wrong in concluding, as the summary tempts us to do, that M. Albert Thomas, save for a proposal to create one more permanent international organization, dealt exclusively in vague eloquence. In fact—again judging from the summary—possibly our proviso is superfluous, for the new international centre, we read, "should apply itself indefatigably to acquiring the necessary authority for defining population needs and proposing the means to satisfy them," which sounds a trifle nebulous. Of the scientific contributions in a narrower sense, Professor Pearl's seems to have contained nothing which he has not admirably expounded elsewhere; Mr. E. J. Lidbetter's analysis of pauper stocks requires more detailed exposition to be really intelligible and convincing; and Professor Carr-Saunders's contribution on differential fertility seems to have been rather slender.

As we have said, it is not fair to judge from so bald a summary, and in any case the *imponderabilia* of an international gathering, the advantage of bringing into contact intellects profoundly different innately and by training, of converting a name into a personality, are not measured by a *procès-verbal* or even a complete report. It may well be that this conference was a great success, and the report before us at least testifies to the pleasure it gave its participants. At the same time, such a summary does bring into consciousness doubts whether there are not many important topics which cannot be usefully discussed by international gatherings, and whether the business of persuading scientific men to assemble at, say, Geneva is not being overdone. It is obvious that neither the policies of national Governments in the matter of immigration laws nor the practices of individuals in the matter of "birth control" are in the least likely to be influenced by the lectures or resolutions of professors, economists, or any other "experts." Sir Bernard Mallet had, of course, no illusions as to this. The sentence we quoted from his opening address shows that he was concerned to secure a strictly scientific discussion of the problems. But there seems to be an insuperable difficulty, in that the problems which can be brought under the connotation of population problems are heterogeneous, and, for their comprehension, need a mastery of different techniques rarely at the command of one man. The discussion of such measures in general meetings, even when the speakers have a common language, is not likely to be of much value; it will be of less if to differences of technical knowledge we add differences of mere language. Many speakers at this conference seemed to think that all would be made plain were some new international bureau created which should "co-ordinate" efforts and "sift the evidence collected." Anybody who has attended international gatherings at Geneva is familiar with this sentiment. The suggestion is that we do not know the answer to certain questions simply because we have not collected enough data. But at least two alternative explanations are possible. The first is that Newtons and Einsteins are rare, the second that we do not know what problems we want to solve. Even permanent residence in Geneva does not convert ordinary men into Newtons, while what is unintelligible in English will still be so when rendered into French.

In our view, not the conference hall, but the study, where the papers of other students can be read at leisure, is the proper centre of international co-operation in research into such problems of population as can be solved.

THE RICKMAN GODLEE LECTURE.

Lady Godlee has founded and endowed at University College a lecture in memory of her late husband, who was a student of the medical school, was appointed assistant surgeon to the hospital in 1877, was Holme Professor of Clinical Surgery from 1892 to 1907, and remained surgeon to the hospital until 1914. He was Emeritus Professor of Clinical Surgery until his death in April, 1925. The foundation is managed by a joint committee of University College and University College Hospital Medical School, and the foundress desired that the lecturer (who should as a rule not be a member of the college or the medical school) should have scope to select his topic from the long list of subjects in which Sir Rickman Godlee was interested. These were enumerated in the trust deed as: "medicine; surgery; natural history; natural science and philosophy; history—past and present, political, sociological; art; literature; travel; biography; archaeology; psychology; and anthropology." The first lecture was given by Viscount Cecil of Chelwood on October 27th in the Hall of University College to a meeting over which Sir Berkeley Moynihan, President of the Royal College of Surgeons, presided. In a brief introductory speech Sir Berkeley Moynihan said that as the lecturer might deal with any of the subjects in which Sir Rickman Godlee had been engaged, and as his tastes were catholic, and his intellectual facets almost equal in number to those of the distinguished cousin of the first lecturer, it was legitimate to look forward to a series of most interesting orations. Sir Berkeley recalled his first meeting with Sir Rickman Godlee, by whom he was examined at the Royal College of Surgeons. Godlee had even then greatly distinguished himself as an anatomist, as an artist who had illustrated with unsurpassed accuracy and beauty the gross anatomy of the body, and as a pioneer in surgery. Armed with the weapons which his uncle Lord Lister had forged, he had, with Dr. Hughes Bennett as colleague, operated in the year 1884 for cerebral tumour. He was soon to publish with Sir James Fowler their work on *Diseases of the Lungs*. In the new surgery of the cranial and thoracic cavities Godlee was among the earliest adventurers, showing how the diverse qualities of physician and surgeon might be caused to work together for the patient's welfare and to the advance of knowledge. In both cases he had laboured in friendly and fruitful co-operation with a

physician. Godlee, who was President of the Royal College of Surgeons when the speaker joined the Council, was the almost ideal chairman. All business to be considered had been carefully prepared, and every aspect of it most thoroughly studied. He was tolerant of opposing opinions, dispassionate in judgement, prudent in council, wise and circumspect in action. Godlee did not make friends easily. He seemed at first a little aloof, disliking any early approach to intimacy. But he was capable of real affection. Wordsworth said of his wife that her love had ceased to be like a fountain, and had become a well. That was true of Godlee's affection. It did not burst out and immerse one in its revelations, but when sought it was deep and almost inexhaustible. He had a quiet sense of humour and a quizzical enjoyment in intellectual and tactical difficulties. In contact with Godlee petty, ignoble things were of no account, and one often left him with a sense of spiritual invigoration and encouragement. Godlee, like Lister, was a Quaker. The selection of Lord Cecil, our champion of peace, as the first lecturer was therefore most appropriate. Viscount Cecil's lecture, which was on "The co-operation of nations," dealt generally with the subject, but had special reference to the work of the League of Nations. He laid stress upon the influence to-day exerted by this country in the counsels of Europe, and expressed the confident hope that, given only courage and vision, it would be able to take a leading part in saving the world from future wars.

THE BRITISH MEDICAL BUREAU.

To the great and varied organization it maintains for the convenience and assistance of its members the British Medical Association has this week added a Medical Bureau, for giving advice with regard to the transfer of practices, as to partnerships, and as to assistants and locumtenents, and for dealing with other aspects of the business side of general practice. The British Medical Bureau starts with the advantage of commanding the experience of the Scholastic, Clerical, and Medical Association, established in 1880, and already well known to the profession as a trustworthy and successful agency for the transaction of medical, scholastic, and accountancy business. The arrangement has been brought about as the result of negotiations conducted by the Council with the approval of the Representative Body, whereby a considerable share in the capital of the Scholastic, Clerical, and Medical Association has been acquired by the British Medical Association, four representative members of which will in future act as directors of this old-established company. Details of the work the Bureau will do for members are set out in full in an advertisement printed this week on page 61. As will be seen, the British Medical Bureau will be under the management of Mr. A. V. Storey, who has been long associated with the agency, and will also have the services of a staff of qualified accountants wholly engaged on medical work, who will investigate practices for purchasers, audit books and accounts, and give advice as to income tax. A register is kept of medical men willing to receive resident patients, and the scholastic department will advise as to the selection of educational establishments, private tutors, and governesses. From much experience of the work of the Scholastic, Clerical, and Medical Association and of its straightforward method of doing business, the Association has in the past been able to advise members to consult it, and can now commend the new Bureau with every confidence. Members of the British Medical Association will have the advantage of a reduced scale of charges applicable to them. All correspondence should be addressed to Mr. A. V. Storey, General Manager, British Medical Bureau, 12, Stratford Place, Oxford Street, W.1 (telegraphic address: Triform, Wesdo, London; telephone, Mayfair 1782 and 1783).

FIRST AID ON THE ROADS.

THE number of patients carried by the Home Ambulance Service of the Order of St. John and the British Red Cross Society during the third quarter of this year was 29,107. There are 369 ambulances altogther, and the average number of patients carried in each for the three months is 79; the practice of using ambulances for moving patients is increasing; five years ago the average number carried during a quarter was only 43. Probably the increase is to some extent due to the greater number of accidents that occur on the roads. Last year in the English counties there were 121,267 accidents in the streets and roads resulting in death or personal injury. A suggestion made a short time ago that a road service should be set up for the purpose of giving first aid to those injured in traffic accidents has been vigorously taken up both by the Order of St. John and the British Red Cross Society. Already the Home Ambulance Service has been instrumental in dealing with an immense number of persons injured in road accidents. A certain number of units of the Order and Society have also, for some time past, been giving special attention to first aid on the roads. The appeal to extend this work and to place the service on a national basis has met with a very satisfactory response. The work done in this respect during the past summer has been to a large extent experimental; but much useful experience has been gained as to ways in which the service of members of the two societies can be most usefully employed. Depending, as it does, on the service of members of voluntary organizations, the majority of whom are at work all the week, it is principally at week-ends and on public holidays that actual roadside work can be performed. It is, however, at those times that the demand is most urgent. In order to meet the needs of those who are injured in road accidents at times when first-aid workers cannot be standing by, a large number of roadside boxes have been erected by local units of the Order and Society. These boxes contain bandages and dressings, and in some cases a stretcher is included in the box. If these boxes are not placed where someone is always in attendance to open them, arrangements are made that, by breaking a pane of glass, the key of the box can be obtained. With the growing volume of motor traffic it is, unfortunately, not probable that the number of road accidents will sensibly decrease for some time, and it is hoped that next year the work of giving first aid on the roads will be firmly established as one of the most useful undertakings to which members of the two organizations can devote their skill.

THE PREVENTION OF MATERNAL MORTALITY.

A MEETING attended by representatives of associations in touch with working women was held in London on October 27th to consider how, by the dissemination of information and by administrative measures, maternal mortality might be reduced. The meeting was presided over by Lady Barrett, M.D., dean of the London School of Medicine for Women; the chief organizer was Miss Gertrude Tuckwell, a member of the Royal Commission on National Health Insurance; and the committee in charge of the arrangements included representatives of religious bodies, such as the Mothers' Union of the Church of England and the Salvation Army, and industrial bodies, such as the Standing Joint Committee of Industrial Women's Organizations. It was stated that this committee would be kept together to pursue the subject with a view to spreading enlightenment among working women—for instance, by the circulation among mothers or prospective mothers of literature containing simple advice on the subject. Sir George Newman, Chief Medical Officer of the Ministry of Health, gave the principal address, in which he said that, taking the average of the last ten years, 750,000 women in England and Wales gave birth to children each year. In rendering that

service to the nation 3,000 of them died in the act or so soon after that the death was attributed to childbirth, and thousands of others, as evidenced by insurance returns and hospital records, suffered from impairment of health. Of the women who died, 75 per cent. were under 35. He sometimes thought that there should be an inquiry into every death from childbirth, for such deaths seemed to him to call for explanation as much as any fatal accident. Three principal measures were urgently necessary. The first was pre-natal hygiene; local authorities had provided between 700 and 800 ante-natal centres, but at present only a small fraction of the 750,000 women just mentioned were receiving effective assistance. It was necessary to create a public opinion which would lead the pregnant woman to consult her doctor in a simple and natural way at the earliest juncture. The second need was for maternity homes. Partly because of the necessity for satisfactory treatment, and partly because of the frequent inadequacy and unsuitability of home accommodation, there were many cases of childbirth in which the woman should be delivered in a maternity home. Since the organization of the Ministry of Health 150 maternity homes, with 2,300 beds, had been established or approved, but further provision on a large scale was still required. The third need was for skilled and competent assistance at childbirth. Arrangements had been made by the responsible authorities for the more thorough training in obstetrics of the pupil midwife and the medical student, but the large number of women qualifying for the C.M.B. certificate made it difficult for the medical schools to provide their students with as full a training and experience as was required, and, along with other matters, including the administration of maternity benefit, the Ministry was now giving attention to the question of how far it was expedient to have an enrolment of upwards of 63,000 certified midwives while less than a quarter of them were actually practising midwifery. On the motion of Lady Barrett a resolution was carried pledging the meeting to do all in its power to reduce the present unnecessary suffering and death rate in childbirth, and calling for skilled medical and midwifery services to be made readily available. To this end the resolution urged improved midwifery training of medical students and midwives, and such readjustment and extension of the provisions for maternity under the National Health Insurance Act as might be necessary, together with an extension of the work of the public health authorities and other bodies in the provision of clinics and welfare centres and health visitors.

SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

The annual meeting of the Court of Governors of the London School of Hygiene and Tropical Medicine was held on October 31st in the Council Room of the British Medical Association, Tavistock Square. Sir Holburt Waring was re-elected chairman, and presided. The report of the Board of Management contained a reference to the recommendation of the committee appointed by the Minister of Health on the way in which clinical and pathological facilities for the study of tropical diseases could best be secured. The recommendation was that an imperial hospital with 150 beds should be established. Apart from the need of facilities for study and research, the committee emphasized the pressing necessity for further hospital provision for sufferers from tropical diseases. On both grounds it was thought that the proposed scheme would have a strong call on the support of the business community interested in the economic development of tropical and subtropical countries. It was estimated that a capital sum of £250,000 would be required, and it was hoped that a strip of land in Malet Street forming part of the Bloomsbury area acquired by the University of London might become available. It seemed probable that the school might be asked to co-operate with the Colonial Medical Research Committee in the establishment of schemes of research in various parts of the Empire, and the Academic Board of the school was prepared to draw up a programme of research in tropical medicine. Another question under consideration was the need for the expansion of the work of the Institute of Agricultural Parasitology on imperial lines, and proposals had been made to the Empire Marketing Board for its financial support. The medical course in tropical medicine (the full course extended to twenty weeks) had been a success, but the propriety of providing a short intensive course for medical practitioners who had to go to the tropics at short notice was under consideration, as was also the institution of a short course in hygiene for persons employed by banks and firms engaged in tropical commerce and industry, and for others who were going to reside in tropical or semi-tropical climates. The need for a larger supply of trained bacteriologists was urgent, and new courses of study had been established in bacteriology and immunology, directed by Professor W. W. C. Topley, and in epidemiology and vital statistics, directed by Professor Greenwood. It was also desired to establish a chair of public health with a view to the appointment of a professor in the group of subjects comprising the principles and practice of preventive medicine, general sanitation, and public health administration. Consultation with local authorities and other bodies would be necessary, but the Board considered that in organizing the division the director, Dr. Andrew Balfour, should at once have the help of the professor designate. As to finance, it was reported that the University Grants Committee had promised to increase its grant of £7,200, made in 1926-27, to £18,000 in 1927-28. This money was needed for new courses of study, and it had been proved that £25,000 a year promised by the Government would not be adequate. A note had therefore been sent to the University Grants Committee, containing an estimate that an Exchequer grant of £50,000 a year would be required in a full working year. An appeal would also be made to the Colonial Medical Research Committee to obtain additional financial support from colonial sources.

AMYOTROPHIC PARALYSIS AFTER INJECTIONS OF ANTITETANIC SERUM.

Among the various manifestations of serum disease a somewhat grave and persistent, though fortunately rare, form is paralysis with muscular atrophy. Of this L. Pollet collected and reviewed twenty-five examples, eighteen of which occurred after the use of antitetanic serum. Various explanations of these cases have been proposed, that most usually accepted being that it is due to peripheral neuritis or inflammation of the nerve roots. Verger, Aubertin, and Delmas-Marsalet have recently reported[1] two cases of amyotrophic paralysis after the administration of antitetanic serum, and have argued in favour of the view that the change is in the spinal cord; they agree that the paralysis is more frequent after antitetanic serum than after any other kind of antitoxic serum, but contend that it is not anaphylactic; it is due, they think, to a selective toxicity of the antitetanic serum towards the central nervous system. From critical analyses of their two cases they conclude that the paralytic phenomena correspond to those of an acute poliomyelitis of the Heine-Medin type rather than to those of multiple neuritis or a radiculitis. A detailed discussion of the characters of the sensory changes leads to the same conclusion. One of the cases showed a dissociation of sensation the reverse of that in tabes and radiculitis, and the changes in perception of pain and temperature resembled those of the syringomyelic

[1] H. Verger, E. Aubertin, et P. Delmas-Marsalet: *Rev. de méd.*, Paris, 1927, xliv, 451-459.

syndrome much more than those of multiple neuritis or radiculitis; in this case the presence of lymphocytosis in the cerebro-spinal fluid was held to afford evidence of meningeal reaction, and the spontaneous pains, which might be regarded as suggesting neuritis, are ascribed to the myelitis. In this connexion attention is directed to the severe pain that may accompany Heine-Medin disease, and to severe pain produced by the hemisection of the cord necessitated in removal of an intramedullary tumour causing Brown-Séquard's syndrome. The muscular tenderness on pressure is regarded by the authors as very fallacious evidence of multiple neuritis, as it is present in adults with acute poliomyelitis. The selective paralysis of certain muscles, such as the serratus magnus, is explained by the consideration that the anterior cornual cells, though histologically alike, differ in their functional activities and physio-chemical reactions.

MODERN MIDWIFERY.

Dr. W. J. Young of Harston evidently enjoys the practice of midwifery, and is strenuous in his endeavours to mitigate the risks and pains of labour. In July last he gave his presidential address to the Cambridge and Huntingdon Branch of the British Medical Association under the title "Then and now in midwifery." Dr. Young thinks that, with "twilight sleep," morphine, chloroform, and spinal anaesthesia, together with the use of axis-traction forceps, we have attained as near to perfection as possible in relieving the sufferings of parturient women. He is not happy, however, about the extended employment of midwives, which he regards as reactionary and likely to perpetuate a large amount of preventable suffering. But a comparison of the management of labour a hundred years ago and to-day convinces him that enormous advances have been made; that the growing practice of ante-natal care, and the negligible risks attached to formidable obstetric operations, have contributed much to these advances; and that the elimination of sepsis, if it can be accomplished, will completely crown the achievements. He attributes the apparent callousness of old-time accoucheurs to the spirit of the Middle Ages—a spirit which did not concern itself with physical pain, but was greatly occupied with spiritual sufferings. It is thus that he accounts for the long delays in the second stage, even after forceps had come into use; so that sometimes the head was left in the pelvis, or even on the perineum, for many hours, while resort was had to such practices as bleeding. Dr. Young illustrated his discourse with references to many famous persons, from the mother of Socrates, who regaled her son with stories of the sufferings of her patients, to Mrs. Jarvis of Clerkenwell, who was delivered, "after three mortal hours of the crochet," in 1830; and from Helvia, the mother of Cicero, to Louise de la Vallière, for whose benefit Louis XIV introduced male accoucheurs.

TRACHOMA IN CHINA.

In 1925 Dr. Harvey J. Howard, professor of ophthalmology in the Peking Union Medical College, was captured by bandits. His experiences are told in graphic but modest fashion in a book entitled *Ten Weeks with Chinese Bandits*.[1] He was on a visit to his friend Major William Morgan Palmer, an Englishman who had done good service for China, and had initiated a most promising experiment in agriculture in Northern Manchuria which, had his life been spared, would probably have done much for the relief of economic conditions in that country. Alas! raiding bandits attacked one of the outlying farms of the estate, and in an attempt to frighten off the invaders he was shot dead. The professor, who was with him at the time, was carried off into captivity and held to ransom. He encountered some amazing experiences, and endured much hardship in the scurried flight of the bandits when they were pursued by numbers of troops sent out to rescue him. Ultimately he was released. Dr. Howard found disease rife among his captors, and considered that opium was at the root of most of their degradation. Some of them were men of high culture, and had held important positions in the civil and military life of the country. One of his captors, a man of education, suffered badly from trachoma, and was on the verge of blindness from corneal ulceration of both eyes. By reason of his ability to relieve him of pain and stay the symptoms, this man became his protector, and probably saved him from being killed. The manner in which he treated this case, and severe wounds that threatened to become gangrenous, when there were no medicaments at hand shows what can be done when simple measures are applied with intelligence.

[1] *Ten Weeks with Chinese Bandits*. By Harvey J. Howard, M.D. London: John Lane, the Bodley Head, Ltd. 1927. (Pp. 272. 8s. 6d. net.)

SIR CHARLES J. MARTIN.

The appearance of Professor C. J. Martin's name in the recent list of Knights Bachelor created on the occasion of the King's birthday was most cordially welcomed by the staff of the Lister Institute as a well deserved tribute to one who had gained high scientific distinction, and who during the past twenty-four years had so happily guided the fortunes of the Institute. At a special meeting of the staff it was decided that the occasion might fittingly be celebrated by presenting Sir Charles Martin with his portrait as a token of their personal esteem and their appreciation of his great services to the Institute. Subscriptions to the portrait were confined to present staff and research workers and to past members of the staff during Dr. Martin's directorate. The painting of the portrait was entrusted to Mr. Neville Lewis, and the finished work has given much satisfaction. The portrait was presented at a meeting in the library of the Institute on October 28th, when Professor Harden, F.R.S., presided over a large company of past and present members of the staff and research workers. As one of the few members who could recall Dr. Martin's arrival as director in 1903, Professor Harden referred in eloquent terms to the scientific and administrative ability of the director, his versatility and helpfulness, and, above all, to his great personal charm and tact, which had conduced so greatly to that domestic harmony and camaraderie which had ever been the pride of the Lister Institute. Sir Charles, in returning thanks for the portrait, alluded to the great good fellowship among staff and workers which had rendered so pleasant the years he had spent among them.

J. & A. CHURCHILL.

The medical publishing firm of J. and A. Churchill, long associated with Great Marlborough Street, has lately moved to larger premises at Nos. 39 and 40, Gloucester Place, Portman Square, W.1, at the corner of York Street. The firm was founded in 1825 by John Churchill, grandfather of the present partners. For many years the two sons of the founder, John and Augustus, had charge of the business, and each in turn introduced a son, Mr. A. William Churchill, M.A., and Mr. J. Theodore Churchill, who jointly carry on the tradition of the house. Members of a profession which has for over a hundred years had friendly dealings with this firm, as publishers of the *Medical Directory* and of many standard medical works, will wish it continued prosperity in its new office, which incidentally brings Messrs. Churchill within easier reach of most of their authors and collaborators. In a pamphlet announcing the change of address there appears an impressive list of medical writers, past and present, whose books have borne or now bear on their title-pages the familiar imprint.

THE PATHOLOGY OF PNEUMONIA.*

BY

J. F. GASKELL, M.D., F.R.C.P.,

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Dr. Gaskell said that his purpose was to submit the results of certain experiments which had occupied him during the last seven years and had yielded, as he thought, certain facts which could be legitimately applied to man. They showed that the titre of the infecting organism was all-important, and that this determined both whether a lesion would be produced at all and what the nature of that lesion would be. An attack of lobar pneumonia in the healthy adult was due to organisms of titres between 5 and 7, which were otherwise comparatively rare. The deduction might be made that it was spread by direct contact, infection passing from throat to throat, though very possibly intermediate carriers were often concerned.

In any attempt to produce infective lesions by experiment estimation of the virulence of the infecting organism was of the utmost importance; this was particularly so in the case of the pneumococcus, because its virulence varied so greatly. Earlier workers used organisms which answered the criterion that one-millionth of a cubic centimetre of an eighteen hours' broth culture killed mice when injected intraperitoneally; their method of obtaining such a dose was by successive dilutions in broth. This criterion was open to the objection that the few organisms injected lay in a comparatively large volume of a nutrient fluid which was not rapidly absorbed and in which they could multiply freely, the host acting as a living test tube. The method, therefore, did not give an accurate measure of the minimal lethal dose to mice.

The virulence or pathogenic power of an organism depended upon two factors which could not be measured separately—namely, the invading power of the organism and the resisting power of the host. In order to obtain any measure of virulence it was necessary, therefore, to standardize as far as possible one of these factors—namely, host resistance. The measure then used is the smallest dose of the organisms which will cause death. It was, therefore, essential to employ a method which ensured immediate reaction between the attacking organisms and the defences of the body. The organisms must be denied all facilities for multiplying other than those provided by the tissues of the host. The mouse was an experimental animal eminently suitable for the measurement of pneumococcal virulence, owing to its high susceptibility, and if healthy mice whose weight lay within narrow limits were used a fairly satisfactory stabilization of the host factor was obtained. The possibility of vitiation of the measurement of the dose of the organism by multiplication in the fluid introduced could be obviated by dilution in normal saline, which was rapidly absorbed. Such dilutions must, however, be injected immediately, as the pneumococcus rapidly died in saline solution.

His own experiments had been almost entirely carried out with a single strain of pneumococcus whose virulence had been altered at will. For convenience the measure of virulence or titre had been taken as the logarithm of the reciprocal of the minimal lethal dose—that was to say, the titre being x, the minimal dose was $1/10^x$. The actual dose given could be roughly estimated from the fact that an eighteen hours' broth culture contained between 200 and 500 million organisms, or otherwise 2×10^8 to 5×10^8. The minimal lethal dose at titre 7 therefore lies between 20 and 50 cocci only, and titre 8 becomes an absurdity.

The experimental animal selected was the rabbit, an animal moderately susceptible to the pneumococcus, which fortunately proved very comparable to the human host in its relationship to infection.

Lung Structure.

Dr. Gaskell said:

In the mammalian lung the bronchial tree is lined with ciliated epithelium up to its terminal branches, which end in one or two terminal bronchioles having non-ciliated epithelium, each of which opens into an alveolar unit consisting of various portions, which have been accurately described by Miller, and named by him, on the analogy of a classical house, the vestibule, the atria, and air vesicles with terminal pouches or air cells. Owing to the absence of ciliation of these terminal bronchioles any material which reaches into or beyond them is not removed, but is speedily sucked in by the respiratory movements and is bound to become spread through the whole system. Such a terminal bronchiole with its air spaces may be termed an alveolar unit, and any infection which reaches it necessarily involves the whole unit.

These terminal units not only occur at the end of terminal branchings, but are also given off throughout the bronchial tree, rising from the largest bronchi, usually being in pairs, and connected to such a bronchus by only a very small ciliated bronchiole. The central part of the lung is composed of such units, which are thus in very intimate connexion with the biggest bronchial tubes.

Owing to the respiratory to-and-fro current aided by the ciliary action of the epithelium, material lying in the large tubes is rapidly side-tracked into these central units. There is a great tendency for these small branchings consisting of a tiny bronchiole with two units attached to occur in whorls of three, a peculiarity of structure which explains the trilobed appearance of the consolidation not infrequently seen in broncho-pneumonic conditions.

Method of Experiment.

Dr. Gaskell then described the method he employed to make certain of introducing pneumococci into the lung itself.

Tracheotomy was performed, and a soft rubber tube of such size as to engage in the opening of the main bronchus to one lobe of the lung passed down the trachea. The culture was injected into the tube by piercing it with a fine injection needle, and the material blown into the lung by means of a puff ball on the external end of the tube. It was found that by far the commonest site of any lesion produced was the lower lobe of the right lung, which is of interest, because of the frequency with which this lobe is the site of pneumonia in man. The probable explanation in both cases lies in the fact that the bronchus of the right lower lobe is in the most direct line with the trachea. As a rule 1 c.cm. at least of the culture was injected, and it was estimated that about half reached the lung itself, the remainder being lost in the tube. Over eighty experiments were performed with the Type I pneumococcus, whose virulence varied from a titre of below 3 to one between 6 and 7. The nature of the lesion obtained depended entirely upon the virulence of the organism used, and not upon the dose given.

Broncho-pneumonia.

When organisms of about titre 4 were introduced into the rabbit's lung, they and the material in which they were contained were speedily side-tracked by the respiratory current and ciliary movement into the nearest alveolar units. Frequently the material had reached only the larger bronchi and had been side-tracked into the central units in connexion with them, thus giving rise to a patchy central pneumonia; if the material had spread more widely a diffuse broncho-pneumonia was produced. The inflammatory reaction which took place remained confined to the units thus invaded, which were often in the earlier stages clearly delineated by the consolidated area. It was only in the early stages that cocci in any quantity could be identified in such a lesion. They appeared to have little power of multiplication and to be rapidly destroyed by the inflammatory reaction, though, as would be mentioned shortly, this destruction was not always complete. Later the neighbouring alveoli began to take part in the inflammatory reaction, so that the unit outline became obscured.

The capillaries of the consolidated patch became more and more engorged, reaching a maximum at about the fourth or fifth day. They then gradually became more inconspicuous, and in the meantime the more fluid exudate became slowly absorbed by local lymphatics.

These experiments threw light on that low grade form of broncho-pneumonia which occurred in children, characterized by the successive appearance of fresh patches of lung infection which might even continue for as long as six months. The explanation they suggested was that the local defensive reaction in the original lesions had not been sufficiently intense completely to destroy the invading cocci.

* Being an abstract of the Bradshaw Lecture delivered before the Royal College of Physicians of London on November 3rd.

Lobular Pneumonia.

As the virulence titre of the invading organism increased, though the initial states of the cleansing of the bronchi and side-tracking of the infecting material were the same, the inflammatory reaction became both more extensive and more intense in nature. The power of the cocci rapidly to reproduce themselves was increased, so that they were much more easily found in the earlier stages, and were no longer confined by the limits of the alveolar unit, but spread directly into others lying around it. The nature of the inflammatory reaction was changed owing to an increase of the numbers of polymorphonuclear leucocytes and consequently a diminution in the preponderance of the larger alveolar cells. The serous exudate was increased and fibrin might begin to be formed in it.

The capillaries again became more and more engorged up to about the fourth day, but then, especially in the centre of the patch, they became rapidly obliterated by the pressure of the exudate in the alveoli. It was during this early period that cocci were most conspicuous. Though the inflammatory patch had become much larger, its periphery was still similar to that of the smaller patch with catarrhal exudate taking place at a fairly early stage. These patches might become so large that they coalesced to form the more extensive lobular type of lesion.

Lobar Pneumonia.

With a further rise of titre to a value of between 5 and 6, if a suitable dose was introduced, a lobar lesion was obtained. The organisms had now a much greater power of reproduction and invasion, and spread rapidly throughout the lobe, being apparently able to keep in advance of the host's attempt to localize them by inflammatory reaction until the periphery of the lobe was reached. A lobar lesion twenty-four hours old showed the process clearly.

In this lobar form of lesion the distension of capillaries did not reach its maximum till about the fourth day, after which the capillaries became somewhat suddenly obliterated by alveolar pressure. The lymphatic system became widely dilated throughout the lobe, distension reaching a maximum at about the third day. The large lymphatics round the larger vessels were then extremely conspicuous, and the bronchi and bronchioles were widely involved; they were filled with exudate and merged into the general consolidation. Cocci were most conspicuous at the spreading edge in the earliest stages. They could easily be found up to the third day, with much more difficulty on the fourth day, and had practically disappeared by the fifth day.

Lymphatic Drainage.

In a few experiments at the lobar titre the involvement of the lymphatic system might cause fatal results. Though the lymphatic channels contained all sorts of debris which must have been derived from the alveoli of the lung, free cocci were, as a rule, completely absent; only an occasional polymorphonuclear cell contained them, and the contrast was great between the wide lymph channel and the alveoli next to it, in which free cocci were numerous. Occasionally an intense invasion of the whole lymphatic system had taken place and the picture was reversed.

These results were perhaps of wider and more general application. They indicated that the swelling of the lymph gland, which belonged to any inflamed tissue, was usually caused by debris drained from the part affected, which was in itself sterile, except for the presence of organisms which, as a rule, were safely enclosed in leucocytes, and became filtered out in the peripheral sinuses of the lymph gland. Such organisms were mostly killed by the leucocytes; if all were destroyed the gland subsided without breaking down, but if some were successful in destroying their host, the gland then suppurated.

Occasionally, however, an infection was of such virulence that the power of resistance of the peripheral lymphatics became destroyed. The lymphatic system draining the part underwent a true invasion and acute lymphangitis occurred.

Invasion of the Blood Stream.

In all experiments where definite lesions had been obtained and the animal had been killed on the first or second day, blood cultures yielded positive results. By the fifth or sixth day, even when the lesion was severe, the blood culture had almost always been sterile. Thus organisms were always present in the blood at the earlier stages.

Pleurisy.

The relation of pleurisy to lung lesion varied very considerably. An intense form of double pleurisy and pericarditis might occur with titres of high virulence, and probably developed with extreme rapidity, beginning within twenty-four hours of invasion. Pleurisy has also been found with milder types of lesion due to cocci of lower virulence in connexion especially with the lobular type of lesion. In its mildest degree it consisted of a patch situated over a lobular lesion which had just reached the surface; the patch then had been found to be sterile at all stages. When the lung lesion was larger, the pleurisy, though local, was sometimes infected, but usually when this had taken place the whole pleural cavity soon became involved and considerable effusion occurred. A lobar lesion had also been accompanied by unilateral pleurisy with effusion.

Pericarditis.

In a few experiments the pericardium alone became infected, both pleural cavities escaping. The relationship of the root of the lung to the pericardium being very close, an infection mainly localized to the central region of the lung near the root could reach the surface, where it lay against the pericardium and directly invaded this cavity. Such pericarditis, if recovered from, gave rise to adherent pericardium, which suggested that certain cases of this condition might arise from a pneumococcal infection by way of the lung.

Crisis.

On the strength of the facts above described Dr. Gaskell attempted an explanation of the crisis in lobar pneumonia. He said:

I have already stated that cocci have practically disappeared from the lung on the fifth day, but are usually easy to find in the more severe lesions until then. Now the chief toxin of the pneumococcus is an endotoxin which is only liberated when the cocci are killed. There is thus an increasing liberation of endotoxin up to the fifth day, but after that the supply practically ceases. One of the factors determining the crisis may therefore be the final neutralization of endotoxin by the defences of the body forty-eight hours later on the seventh day. Another extremely interesting phenomenon has been demonstrated by Armstrong. He has shown that in lobar pneumonia the protective power of the serum, which is extremely slight at the onset of the disease, practically vanishes after twenty-four hours and remains absent for the first four days. On the fifth day it suddenly reappears and increases enormously and with great rapidity to a maximum on the seventh or eighth day. It then slowly diminishes throughout convalescence. The rapid rise of this power to destroy pneumococci coincides with the crisis. The combination of these two processes thus affords some explanation of the regularity with which crisis occurs on or about the seventh day.

Low Virulence Organisms. Terminal Pneumonia.

No experimental method of lowering the resisting power of the host had been attempted, but Dr. Whittle had been approaching the problem of the nature of terminal bronchopneumonia from the clinical side, and had also attempted to correlate the titre of organisms obtained from human lung lesions with the experiments Dr. Gaskell had described. He had had the opportunity of examining strains from a considerable number of cases of pneumonia, extending over nearly two years, which had occurred in a somewhat isolated village near Cambridge; the outbreak had therefore been of the nature of an epidemic. The titre of the strains recovered had been remarkably constant, and, the number of the inhabitants of this village being comparatively small, it was possible to draw up a scheme of the paths infection had probably taken. In this instance a pneumococcus of high titre had therefore been definitely traced from case to case by actual direct contact. These results opened up the prospects of control of pneumococcal infection in so far as lobar pneumonia in the healthy adult was concerned, and pointed very strongly to the necessity of the isolation of this type of disease. The occurrence of pneumococci of titre 5 or over in the human throat was undoubtedly very uncommon; the organisms with pneumococcal reactions which were present were almost always of quite low titre.

England and Wales.

St. Thomas's Hospital Dinner.

The old students' dinner of St. Thomas's Hospital was held on October 28th, with Sir Charles Ballance in the chair, at St. Thomas's House, the splendid new residential club for students in Lambeth Palace Road, opposite the entrance to the Medical School. A description of the building and of the opening ceremony performed by the Archbishop of Canterbury appeared in our issue of April 30th, 1927. Among those who supported the chairman on Friday evening last were Sir John Rose Bradford, President of the Royal College of Physicians; the medical heads of the three Services—Surgeon Vice-Admiral Arthur Gaskell, Lieut.-General Sir Matthew Fell, and Air Vice-Marshal David Munro; Sir James Berry, President of the Royal Society of Medicine; Dr. E. W. Ainley Walker, Dean of the School of Medicine at Oxford, and Professor H. R. Dean of Cambridge; together with Sir George Makins, Sir Hector Mackenzie, Dr. T. D. Acland, and other past and present members of the staff of St. Thomas's, the Treasurer (Sir Arthur Stanley), and Lord Riddell, one of the Governors. Sir Charles Ballance, in proposing the toast of prosperity to St. Thomas's Hospital and Medical School, gave some recollections of the time when he was a student in College House fifty years ago. Coming to more recent days he congratulated two old students, Dr. C. H. Vernon on winning the King's prize at Bisley, and Dr. Percy Smith on vindicating in the law courts his professional and personal honour. Sir Arthur Stanley expressed the hope that St. Thomas's House, as a real centre of good fellowship, would prove to be a home and club for all students past and present. Sir Cuthbert Wallace, Dean of the Medical School, who also responded to the toast, referred to the loss by death of three distinguished old students, J. E. Adams, Sir Bryan Donkin, and J. H. Tonking—"the surgical father of Devon and Cornwall"; congratulated Sir C. J. Martin and Sir Farquhar Buzzard on their recent honours; and paid a tribute to Sir Charles Ballance for his thoroughness and largeness of view, and his loyalty to younger men and to the institutions he served. The health of the guests was proposed by Mr. Percy Sargent, who coupled with the toast the name of a successor and worthy compatriot of John Hunter—Sir Arthur Keith. In his reply Sir Arthur Keith congratulated St. Thomas's students on their gorgeous new club rooms, and spoke of his own debt to St. Thomas's for its courteous reception when he first came to London as a shy Aberdeen lad, and for the friends it had given him like George Makins, Charles Ballance, Cuthbert Wallace, and F. G. Parsons.

King Edward's Hospital Fund for London.

In certain respects the statistical report for 1926[1] on the finance of London hospitals, which has just been issued by the hospital committee of King Edward's Hospital Fund for London, is the first of a new series; as compared with those of previous years the present statement is larger and even more interesting. A footnote on an early page recalls that the issue of these reports began with that for the year 1903, and was printed for private circulation only, as were those of the four following years. The first public report appeared in 1909, and contained the figures relating to sixty-six hospitals for the previous year. A new series began in 1922, when an analysis of the general fund income was added, and now, again, change has been rendered necessary by the revision of the system of hospital accounts and the extension of the Fund's area of operations from a radius of seven miles to one of eleven. The present report deals with 134 hospitals individually and collectively; coloured graphs have been added to indicate the gratifying progress during the past five years. The available beds increased from 13,270 in 1922 to 14,170 in 1925, and 14,470 in 1926. The in-patients numbered 200,700 in 1926, as compared with 194,200 in 1925, and 167,900 in 1922. Out-patient attendances have grown from 6,337,000 in 1922 to 7,163,000 in 1925, and 7,455,000 in 1926. The total cost incurred was £3,058,000, an advance of £70,000 on the year 1925 and of £407,000 on 1922. An analysis of the cost of working at each separate hospital is compared with the average cost for the particular group; in the case of the teaching hospitals, for example, this average was £234 for each occupied bed. In an appendix to the report there are tables showing the consumption of certain articles of food on a basis of 100 persons per day, for patients and staff separately and combined. The income in 1926 was £3,019,000, as compared with £2,485,000 in 1922, an increase of £534,000. Between 1925 and 1926 there was a drop of £103,000, due mainly to a large falling off in legacies. The result was that after an aggregate surplus for each of the years 1923, 1924, and 1925, the 134 hospitals had an aggregate deficit of £39,000 for the year 1926, when the number of hospitals with deficits was fifty-five, while seventy-nine had surpluses. Of the total expenditure of £3,058,000, about £586,000, or 19.2 per cent., was covered by income from investments, and £983,000, or 32.1 per cent., by patients' payments and other receipts on account of services rendered, while £1,432,000, or 46.8 per cent., was provided by voluntary contributions, including legacies. The total income came to 98.7 per cent. of the expenditure, leaving a deficit of 1.3 per cent. In addition to the general fund income for maintenance purposes, the hospitals received £280,000 for endowment, and raised £479,000 for building and equipment, bringing the total receipts in 1926 to £3,778,000. The amounts received for buildings and equipment have permitted a steady increase in the number of available beds, as well as other extensions and improvements. The hope is expressed that this report will assist hospital managers to check any excessive expenditure, reducing it whenever it cannot be justified, and thus following one of the recommendations of Lord Cave's committee for the re-establishment of the finances of the voluntary hospital system.

[1] Statistical Report on the Income and Expenditure of One Hundred and Thirty-Four London Hospitals for the Year 1926. London: Spottiswoode, Ballantyne and Co., Ltd. 1927. 2s. 6d. net; 2s. 9d. post free.

Country Hospital for Bristol Crippled Children.

As stated in a previous issue the Bristol Crippled Children's Society and the Bristol Orthopaedic Hospital have amalgamated. The joint body has bought 65 acres of land at Winford in Somerset for the erection of an open-air hospital school for non-tuberculous crippled children. This site, approved by Sir Robert Jones, is on a spur of the Mendips six miles from the centre of Bristol. Here there will be ample room for expansion and space enough to provide country annexes to all the city's hospitals should the need arise. It is proposed that a hospital with three wards of sixty beds each should be built, and work will shortly be started on the first ward with its operating theatre and administrative block. The funds of the joint body amount, at present, to £20,000. It is estimated that at least £40,000 is needed for the erection of the first ward, and £10,000 for each additional ward. When the necessary buildings have been erected the support from local bodies, such as the Education Authority, and others, will almost be sufficient to make the institution pay its way, and, on the experience of other open-air schools similarly placed, the greater the number of inmates the smaller the cost of maintenance for each child, and the better the prospect of the society avoiding any further appeal to the generosity of the public.

R.A.F. Hospital at Halton.

A new hospital for the Air Force was opened at Halton by Princess Mary Viscountess Lascelles on October 31st. Sir Samuel Hoare, Secretary of State for Air, said that it was not intended to duplicate hospital accommodation where military, naval, and civil hospitals were available. Last year some 1,200 patients were admitted from the R.A.F. to naval and military hospitals. Halton was the largest Air Force station in the world, and the hospital there would be the principal hospital of the Force. It contained 204 beds, including twenty for officers, six for nursing sisters, and twenty-three for the wives and children of airmen. It would admit patients not only from the Air Force station at Halton, but from the Air Force serving outside convenient range of naval, military, or civil accommodation, and invalids from overseas. It had been planned

to get as much sunlight and air as possible and to reduce dust and labour in cleaning; its wards were floored with rubber, thanks to the generosity of the Rubber Growers' Association, and a flat roof for natural sun treatment had been provided. There was a well equipped operating theatre, to the lighting of which careful attention had been given. The Air Force, Sir Samuel Hoare continued, was rightly proud of its medical and nursing services, and of the splendid work its medical officers and nurses did at home and abroad, often in the face of great difficulties. There was no service where a higher standard of health was so constantly needed, and no service where efficient surgical help was more urgently required to meet the inevitable strain and risks of life in the air.

Dental Service in Industry.

In his address, which we reported on October 8th (p. 655), given at the opening of the winter session of the Royal Dental Hospital, which coincided with the inauguration of the John Hampton Hale research laboratory, Sir Walter Fletcher emphasized the importance in preventive medicine of the proper development and preservation of the teeth. The matter is also highly important in industry; so that with some firms the worker, before engagement, is required to possess a properly cared-for set of teeth, and provision is made for their maintenance in good condition by dental clinics attached to the works. The Industrial Welfare Society has issued a pamphlet, entitled *Dental Service in Industry*, as a guide to firms in establishing dental services. It is stated that not only is efficiency greatly increased if toothache is absent, but also that a works dental service leads to remarkable decrease in illness from indigestion, gastritis, influenza, tonsillitis, anaemia, and rheumatism. It is suggested that for young workers the treatment provided should be free of charge but compulsory; the reasons being that children now come from their schools with teeth properly attended to, but are not entitled to dental benefit under the national scheme before the age of 21. To older workers charges are made, but these are less than the cost of private dental treatment, while other advantages accrue to the worker. Thus the treatment is carried out in the firm's time; examinations and consultations are free; payment is made by weekly deductions varying with the scale of wages, and where the treatment is voluntary the firm may find it possible to bear a part of the cost. Large firms, with over 3,000 workers, may employ full-time dentists, smaller firms a part-time dentist, or one who visits the works once or twice a week. Finally a contract may be made with a local dentist to treat the workers at his own surgery, at lower rates than those for private patients. The pamphlet contains a large amount of information about the choice of dentist by employing firms, the construction and appointments of the surgery, the organization of the clinic, and the cost involved. Firms are also advised to obtain the co-operation of outside agencies, such as the Hospital Saving Association and the approved societies. The value of this advice will certainly be recognized if and when dental treatment becomes a part of the State's responsibility for health. In such event we may presume that well organized dental services rendered by reputable firms will be linked up in some way with the national service.

Radiology in Pulmonary Diseases.

Under the auspices of the Joint Tuberculosis Council a post-graduate course on radiology in tuberculosis and diseases of the lungs will be held at the Victoria Park Hospital, from November 21st to 26th. Throughout each day there will be an exhibition of special radiograms, and lectures and demonstrations will be given by members of the hospital staff. The following subjects will be dealt with on the six successive days respectively: the radiogram in non-pulmonary tuberculosis; the various stages of pulmonary tuberculosis; pulmonary tuberculosis in childhood; the use of lipiodol; spontaneous and artificial pneumothorax and pleural effusions; and intrathoracic tumours. Demonstrations will be given also on common errors in radiological diagnosis and on the use of *x*-ray apparatus. There will be a museum demonstration on anthracosis and the causes of enlargement of mediastinal glands. A lecture on pleural adhesions will be given by Dr. S. R. Gloyne. The fee for the course is three guineas, and further information may be obtained from Dr. William Brand, the honorary secretary of the post-graduate courses, The Larches, Farnham Royal, Bucks.

Ireland.

Dr. Gaussen of Dunmurry.

A remarkable tribute was paid to Dr. D. P. Gaussen of Dunmurry, co. Antrim, on October 25th, when a meeting, attended by a large number of persons of every class and creed, was held to present a testimonial and address to him. The chair was taken by the Right Hon. J. Milne Barbour, M.P., Minister of Commerce for Northern Ireland, who said that Dr. Gaussen was leaving after occupying the post of medical officer for forty-two years. He was the friend of all, had aided them in their hours of trial, and had given of his best to all on every occasion; he had taken a leading part in sport and in all the activities of life, and when the war came he had offered his services and had gone out for his country. Mr. Barbour then presented to Dr. Gaussen the address, to which more than six hundred persons had appended their signatures, and a cheque. Miss M'Cance handed to Mrs. Gaussen a fine silver salver, and spoke of her valuable services on all occasions. Numerous others spoke and bore testimony to the high qualities of Dr. and Mrs. Gaussen. Dr. Hunter, as a brother practitioner, gave expression to Dr. Gaussen's worth; Dr. Gaussen had been president of the North of Ireland Branch of the British Medical Association and of the Ulster Medical Society, and stood amongst the highest in the local ranks.

Growing Expectation of Life.

Professor Joseph W. Bigger, M.D., president-elect, Dublin University Biological Association, gave an address on the expectation of life and the bacteriological laboratory. One method of ascertaining the expectation of life was that used by insurance offices, where premiums were regulated by a table known as the O.M. table, which had been constructed from the actual experience of sixty British insurance offices between the years 1863 and 1893. A second method was founded on the census returns and the deaths registered in a single year or over periods of three or ten years. The life table method reflected faithfully the healthiness or otherwise of the particular year or period of years. According to the latest life tables of England and Wales, those based on the experience of the years 1920 to 1922, a male aged 25 years had an expectation of 44 to 48 years. According to the O.M. table the expectation of life was 39.58 years. The expectation of life was now greater for all males, healthy and sick together, in England and Wales by about five years than it appeared to be for those carefully selected men who insured their lives. Medical science was constantly advancing—now along one line, now along another. At one time physiology showed the most marked progress. That was followed by bacteriology, and to-day biochemistry was spreading new and attractive vistas. Bacteriology was still a new subject; it was little more than fifty years since, thanks chiefly to the work of the two intellectual giants Pasteur and Koch, bacteriology was firmly established as a science—an appreciation of the facts of which were necessary for any real understanding of medicine and surgery. In conjunction with pathology, the action of bacteria on the human and animal bodies was investigated, and the methods by which the body resisted carefully examined. Bacteriologists made no nice distinctions as to the animal and vegetable kingdoms in the early days, for all disease was their province. Questions of transmission of disease were also being investigated, and it was soon realized that man might be infected not only by another man but also by animals, as in anthrax and tuberculosis. The practical importance of these discoveries could not be over-emphasized, for by knowing how and by what insect a disease was spread they could frequently stamp out the disease. It was not unfitting, the lecturer said, in this connexion to recall the death of Adrian Stokes; he had, to use his

own words, "the fish hooked"; to some other must go the credit for the landing, but the name of Stokes would not soon be forgotten. (As a tribute to the memory of Adrian Stokes those present rose to their feet, and remained standing in silence.)

Dr. Bigger went on to trace the connexion between the expectation of life and the bacteriological laboratory. Expectation of life might be increased by postponing the age of death, or, what amounted to the same thing, by preventing avoidable death. In what way could the biological laboratory do that? There were five chief functions of the laboratory, each with its own influence on public health; these were research, diagnosis, control, prophylaxis, and therapeutics. Of these, research was by far the most important, and sufficient had been said to make clear how much could be done by research to demonstrate the cause of many infectious diseases. To illustrate the influence of the bacteriological laboratory on the expectation of life the lecturer submitted tables showing the expectation at various age periods in different years. The expectation of life in 1920-22 was greater by fourteen years than in the period 1871-80. In the last half-century the death rate had fallen by 21 per cent. Apart from figures, however, no one would deny the great advance of surgery in the half-century, and the number of lives now saved which fifty years ago would undoubtedly have been lost. He made the bold claim that for virtually all the advances made by surgery, for nearly all the lives saved, the credit must be awarded to bacteriology. It had been estimated that the total number sick at any time throughout the year was about double the number of deaths occurring during the year. In the Irish Free State, in 1925, more than 43,000 deaths occurred, and, on that basis, 86,000 were sick every day. By saving one death, particularly one death from an infectious disease, many days of sickness and the cost of treatment were saved, and the labours of the sick permitted to enrich the country. Many years ago the value in potential labour of an English agricultural labourer was assessed at £200. On that basis the Free State lost £8,600,000 each year in the deaths of its people. He did not wish to stress unduly the financial aspect, for the pathos of unnecessary death should in itself be a sufficient spur to fresh achievement, but he realized the truth of Andrew Balfour's dictum: "Demonstrate material monetary benefits resulting from hygienic measures and you may carry the day." That hygiene did pay, and pay handsomely, was just beginning to be realized. The people of Ireland should understand these facts. The first thing, perhaps, was to teach hygiene better to the medical student; to teach him normality and prevention, rather than abnormality and disease. Such incidents must be prevented as that reported from a village in County Dublin the other day, where the medical officer condemned the water supply because five cases of diphtheria had occurred. Instruction must be given in the schools, but an attempt must also be made to reach the adults by posters and handbills and through the newspapers. Not only the public, but the local authorities, and even the Government departments, were lacking in vision. The medical men engaged in the public health service were, for the most part, wretchedly paid, and in a number of recent cases country authorities were unwilling to appoint medical officers on grounds of economy. Such is the falsest of false economy; for a country which is not prosperous cannot afford to indulge in the luxury of ill health. It would be a very inefficient medical officer of health who could not save twenty lives a year—a saving surely worth £1,000, without considering the corresponding saving in sickness. Dr. Bigger said that bacteriology had led to the saving of very many lives, but even with the incomplete knowledge as yet possessed it could save very many more. The way had been pointed out, but the public health authorities had not followed it. Public opinion must force them to do their utmost to save the lives which present knowledge allowed them to save. Cases of infectious diseases were treated in hospitals at the expense of the community, but there was no provision except of the most general description for the prevention of those diseases. Laboratory facilities were available, at the public expense, for the diagnosis of venereal diseases, but what of diphtheria, tuberculosis, enteric fever, and many other diseases? Accurate diagnosis was half the battle in diphtheria, but neither the State nor the local authorities offered the assistance of the laboratory. In most civilized countries facilities for laboratory diagnosis and for the detection of carriers of infectious diseases were available, but Ireland lagged behind. The time had come, Dr. Bigger concluded, for the public to realize what hygiene could do, and to insist on it being done in order that the present generation might reap the harvest that bacteriology had sown as it was being reaped in other countries. It was time that Ireland should follow this lead, and engage in serious effort to prevent those diseases which were known to be preventable.

Scotland.

General Council of Edinburgh University.

The statutory half-yearly meeting of the General Council of the University was held on October 28th. Principal Sir Alfred Ewing presided over a good attendance. Dr. R. McKenzie Johnston, one of the assessors appointed by the Council of the University Court, having intimated that he did not wish re-election, the two assessors to the University Court appointed were Alexander Miles, M.D., F.R.C.S., and Sir Norman Walker, M.D., F.R.C.P. Reference was made to the loss which the University had sustained during the past session by the death of Professor Harvey Littlejohn of the chair of forensic medicine. A draft ordinance for the foundation of a Buchanan chair of animal genetics was considered, and it was intimated that the University Court had received gifts towards the department of research in animal breeding as follows: £10,000 from the International Education Board, New York; £10,000 from Lord Woolavington towards the endowment of the chair; £20,000 from the International Education Board and £16,000 from the development commissioners towards the cost of buildings; and £10,000 from the Empire Marketing Board, with £1,000 from the Highland and Agricultural Society, towards endowment. A report was received regarding a conference of representatives from the various Scottish universities which had been held at Perth in March regarding the status of doctors' degrees. It had been decided that the degrees of D.D. and LL.D. should be continued to be conferred *honoris causa* only. This was approved by the University Council. It was intimated that the University Court had approved of certain changes in the clinical examination for the M.D. degree. The examination for this degree would, in future, consist of two parts—a major and a minor—to suit the experience of bachelors in medicine who had been working along different lines. The examination might, in future, be taken with the major part, consisting of clinical medicine and some special branch of medical science or practice professed by the candidate as the minor part, or the examination might be so taken that the major part consisted of a special branch of medical science or practice professed by the candidate, together with clinical medicine as the minor part. An appendix of the Council brought out some interesting figures with regard to the numbers attending Edinburgh University. The number of graduates on the roll of the General Council at January 1st, 1927, was 16,855, as compared with 12,288 on the corresponding date in 1914. The total of matriculated students in the year 1926-27 was 4,139, as compared with the average figure of 4,038 for the previous ten years. In the medical faculty the number of matriculated students in 1926-27 was 1,017, as compared with 984 in the preceding year, and 1,065 two years previously. The increase in the number of medical students is shown more significantly by the fact that the number of first-year students entering the medical curriculum was 242 in 1926-27, 199 in 1925-26, and 177 in 1924-25, and compared with the average of 189 for the preceding five years. The income of the University for the year ended July 31st, 1926, had been £243,176, as against an expenditure of £241,207, with a surplus of approximately £2,000. The sum received by fees for tuition, examination, etc., was £93,430, while the sum paid in salaries of the teaching staff was £130,083.

The heritable and invested property of the University amounted to over £1,700,000. The benefactions acknowledged during the year 1925-26 had amounted to over £44,000.

MIDWIVES AND MATERNITY HOMES (SCOTLAND) ACT, 1927.

The Scottish Board of Health has issued a circular to local authorities drawing their attention to the Act of the present year which amends the Midwives (Scotland) Act of 1915 and provides for registration and inspection of maternity homes. The Act came into operation on July 29th, 1927. One of the new provisions enacts that any person not certified as a midwife who attends a woman in childbirth may do so only under the direction and personal supervision of a qualified medical practitioner. Protection is, however, afforded to persons attending a case of sudden or urgent necessity. Students undergoing training in midwifery are also excepted. Midwives are given the right of recovering reasonable compensation from the local authority when suspended from practice to prevent the spread of infection. Payments in connexion with maternity and child welfare schemes are also sanctioned. The section relating to medical assistance in case of emergency now provides that the fee paid to the doctor instead of covering "one subsequent visit" shall cover "such further visits as shall be prescribed by the scale" fixed by the Scottish Board of Health. Another section provides that for any areas in which a maternity service and child welfare scheme is not in operation the local supervising authority shall provide the services of a midwife or doctor when necessary, with power to recover the fee from the husband or guardian. With regard to registration and inspection of maternity homes, this section of the Act comes into operation from January 1st, 1928, and imposes a penalty on any person who thereafter carries on a maternity home unless it is registered. The fee payable for registration is to be 5s. The registration is effected by the local supervising authority, but may be reduced or cancelled if the authority is not satisfied that the person is fit to carry on the home or that the situation, sanitation, accommodation, staffing, or equipment is not fit for a maternity home. Homes, together with their prescribed records, may be inspected by officers of the local supervising authorities and by officers of the Scottish Board of Health. The local supervising authority has power to exempt from the inspection and registration any hospital or similar institution not carried on for profit. Local authorities are instructed in the circular as soon as possible to give notice by advertisement or otherwise to ensure that persons carrying on maternity homes in their areas are made aware of the requirements of registration.

Correspondence.

WHAT IS COMPARATIVE MEDICINE?

SIR,—In the report of the meeting of the Section of Comparative Medicine of the Royal Society of Medicine (BRITISH MEDICAL JOURNAL, October 29th, pp. 788 and 797) no actual definition of "comparative medicine" is given. As a study comparative medicine seems so extensive that it can only be defined somewhat as follows:

"The study of disease and its treatment, by comparison, in human beings, animals, and plants, and in relation to race or variety, sex, age, place in family, climate, season, soil, food, and mode of life (as modified by occupation, habits, and surrounding influences)."

It must, of course, necessarily include the study of normal as well as pathological anatomy and physiology, and must partially depend on a variety of other scientific knowledge.—I am, etc.,

London, W.1, Oct. 29th. F. PARKES WEBER.

TUBERCULOSIS OF THE KIDNEY.

SIR,—I have read with great interest the account of the discussion on renal tuberculosis at the Annual Meeting held in Edinburgh last July (BRITISH MEDICAL JOURNAL, October 8th, pp. 625-633), and hope you will allow me to raise a few points.

Regarding Professor Fullerton's method of retroperitoneal catheterization of the ureters by open operation, I would like to mention that in 1913 and 1914 I had four cases on which I did a similar operation, but, instead of making two oblique incisions, I exposed the pelvic portions of both ureters by means of a single median incision. The badly infected ureter was recognizable at a glance. It was thick and hard, and was stretched like a bowstring across the pelvis. The apparently healthy ureter was catheterized through an incision about an eighth of an inch long in its wall.

Recently, I have not found it necessary to expose the ureters for the purpose of making a diagnosis, as I have adopted a different method. No patient with one perfectly healthy and unobstructed kidney ever has permanently high blood urea. On the other hand, normal blood urea does not guarantee the integrity of one kidney, as it may be found where both kidneys are only slightly damaged. If, therefore, a patient suffering from advanced renal tuberculosis gives a high blood urea the disease is bilateral, and I feel that it is unnecessary to catheterize his ureters as operation is contraindicated. If he gives a normal blood urea the ureters should be catheterized, and in most cases the disease will be found to be unilateral. In this way it is possible to weed out most of the inoperable cases without putting them to any discomfort. I have never failed to catheterize the ureters in any case with a normal blood urea, and therefore have not been driven to expose them by open operation in order to make a diagnosis.

I note that Sir John Thomson-Walker stated that chromocystoscopy "has little value in deciding whether the kidney is tuberculous." Strictly speaking he is correct, as a delay in the appearance of the colour, or a diminution in its intensity, is found in a host of conditions other than renal tuberculosis. But if tubercle bacilli have been found in the urine, a poor elimination of the dye on one side as compared with the other is strong presumptive evidence of involvement of that kidney. I believe that, in order to obtain the best results from this test, only a small quantity of indigo-carmine (5 c.cm. of a 0.4 per cent. solution) should be injected into a vein. I never give intramuscular injections, as the time of appearance of the colour is so variable (from six to ten minutes with a healthy kidney). The excretion of the dye commences four to five minutes after an intravenous injection. Again, if a large quantity of the dye is injected, the blue coloration is so intense that the cystoscopic medium soon becomes obscured, and in addition it may be impossible to discover any difference in the intensity of the colour coming from the two ureters, although one kidney may be actually eliminating much more dye than the other. If two solutions of the dye are very dilute a slight difference in their concentration is readily recognizable by the shade; if they are both strong the colour is so intense that a considerable difference in their concentration cannot be detected by inspection. After an intravenous injection of a small quantity of indigo-carmine, not only is the first appearance of the dye easily recognized, but any difference in intensity of the colour from the two sides is usually well marked.

Of course, a good elimination of the dye does not preclude a minute tuberculous lesion of the kidney. The results of this test must always be controlled by catheterization of the ureters before operation. Chromocystoscopy is a test not of renal tuberculosis, but of the functional value of the kidney. Tuberculosis rapidly destroys the kidney's excretory value, and therefore this test is of definite, though indirect, use.—I am, etc.,

London, W.1, Oct. 17th. J. SWIFT JOLY.

DISEMBOWELMENT AND SHOCK.

SIR,—I noticed in your issue of September 24th (p. 569) a letter referring to the capacity of the human organism to endure the shock of being disembowelled. The following incident may be of interest.

During the war I was medical officer to the 33rd Battalion Canadians, and in the battle of Givenchy the first Canadian battalion was very badly cut up, owing to the fact that one or two of the battalions of the British Division on our left met with obstacles which caused our

left flank to be in the air. On our immediate left was a Highland battalion. During this engagement a Highlander walked into my dressing station with his arms crossed in front of his abdomen. He was deathly white and sank to the floor. We placed him on a stretcher and asked him what he would like best, and he asked for a piece of bread, which was given to him. When he held up his hand to receive it, it was observed that he was holding several coils of intestines in his arms. He had been cut across the abdomen with a bullet as neatly as if it had been done with a knife. His intestines had not been perforated. He was given morphine, and dispatched as rapidly as possible to a clearing station in the rear. Unfortunately I was not able, in the heat of the moment, to follow his career.

His fortitude was typical of many of the British soldiers to whom it had been my privilege, from time to time, to render first aid.—I am, etc.,

A. K. Haywood, M.D.,
October 13th. Superintendent, Montreal General Hospital.

*** Dr. C. E. Morris (Holywell, Flintshire) sends us a note of a tradition current in the Flintshire upland about a certain Captain Morgan, who, while on his knees, and holding up his escaping bowels in one hand, slew with his sword his three assailants.

PYREXIA DURING THE PUERPERIUM.

Sir,—I am surprised at the number of practitioners who rush into print on insufficient information. Your correspondents, regarding the above, have failed to appreciate that the Ministry did not intend the terms "puerperal fever" and "puerperal pyrexia" to be synonymous. Every case of a temperature of 100.4° for more than twenty-four hours is not notifiable as puerperal fever, nor is every woman with a headache and a temperature due to mammary irritation or constipation. The Puerperal Fever and Pyrexia Regulations state definitely that puerperal pyrexia is reserved for that class of a rise of temperature which cannot be notified as puerperal fever. The Orders relative to the above are neither unjust nor ridiculous as stated; but if, as your correspondents have deduced, fever and pyrexia are to be used as synonymous terms, then I agree with the Northumberland practitioner that this is indeed meddlesome legislation.—I am, etc.,

Health Department, Sunderland, Oct. 31st. A. Stuart Hebblethwaite, Medical Officer of Health.

PREVENTION OF MATERNAL MORTALITY.

Sir,—By this time many practitioners have read the annual report issued by the Ministry of Health.

Encouraging as many of the sections are, some of them make depressing reading, and in this category is the reference to the mortality of women in childbed. The new midwifery was introduced solely with the idea of reducing mortality. It has now had at least five years' trial. During the last three the death rate, both from puerperal sepsis and from all other causes, has gone steadily up. Meanwhile the birth rate has rapidly fallen.

If these be the results of non-interference, surely it would be better to trust more to art and less to nature. Of course, in a civilized community there is no such thing as entirely natural labour, but there is "assisted" and "unassisted" labour. The latter undoubtedly involves longer suffering, and the mortality figures appear to show that it also means increased risk.—I am, etc.,

Wanstead, E.12. A. Campbell Stark.

"THE HISTORICAL ASPECTS OF QUACKERY."

Sir,—Sir James Barr's last letter makes it very difficult for me to continue this correspondence, but Dr. Kenelm Reid seems to be under a misapprehension which I would like to remove.

In his letters Dr. Kenelm Reid has given to remarks of mine a far wider interpretation than was intended or than can correctly be read into them. The remarks in question applied only to those who "believe" that "all diseases can be both diagnosed and treated by means of two boxes containing some simple electrical apparatus." These persons I naturally designated "the followers of Abrams," since this was the theory admittedly held and put forward by Abrams himself.

Dr. Kenelm Reid makes it perfectly clear in the first paragraph of his letter that he, and presumably also the editor of, and those who contributed anonymously to, the book *Abrams' Methods of Diagnosis and Treatment*, do not come within this category, since this book, as quoted by Dr. Kenelm Reid, does not pretend to support these extravagant claims.

My remarks were not meant to apply to, and, I venture to suggest, if perused carefully could not be read as being applied to, those who do not advance such claims. While I regret that my words have been misconstrued, it is obvious that a suggestion which has not been made is not capable of withdrawal.—I am, etc.,

Edinburgh, Oct. 31st. A. J. Clark.

SECOND ATTACK OF PITYRIASIS ROSEA.

Sir,—In your issue of September 24th Dr. Gordon Edelston (p. 549) gives an interesting memorandum on a second attack of pityriasis rosea, and Dr. Graham Little in your issue of October 8th (p. 663) mentions several cases cited by Drs. Whitfield, Dore, and Gray.

One week ago a young doctor in this city consulted me. He was suffering from an attack of pityriasis rosea of three weeks' duration, the herald patch having been near the right nipple. The rash was profuse and of the macular type, and he had felt "out of sorts" for the previous three weeks. He told me that in 1917, while in the army, he had been in hospital for two weeks with a rash which had then been diagnosed as pityriasis rosea.

A curious fact in both this case and that of Dr. Edelston is the length of time between the first and second attacks—three and a half years in Dr. Edelston's case and ten years in the case reported above. The well known fact that recurrences of pityriasis rosea are extremely rare leads one to think that in the above cases only temporary immunity was conferred by the first attacks.—I am, etc.,

Belfast, Oct. 25th. Ivan H. McCaw.

"SYMPTOM-COMPLEX" OR "SYNDROME"?

Sir,—What exactly is the pathogeny of the expression "symptom-complex"? So far as I know it has no existence in French, being replaced by the more elegant and equally expressive and definite word "syndrome." Is there any reason for the retention of this clumsy Greco-Latin hybrid in English medical literature? Its appearance in our journals and textbooks—I speak from the vaguest of impressions—seems to have coincided with that of the French word in the last few years when research was distinguishing diseases as entities from mere associated groups of symptoms—the sense in which the scholarly professor of medicine in the University of Edinburgh uses it of pernicious anaemia on p. 671 of the Journal, October 15th, 1927.

There appear to be several objections to the use of "symptom-complex." On the other hand "syndrome" from the Greek *συνδρομή*—association or group—seems all-sufficient for our purpose. It can be used by itself or with the name of a disease—thus the syndrome of typhoid fever, meaning the group of symptoms we associate with that ailment; or we can say, with Professor Gulland, pernicious anaemia is a syndrome rather than a disease.—I am, etc.,

Cannes, Oct. 17th. A. A. Warden, M.D.

A PROPOSED ASTHMA RESEARCH COUNCIL.

Sir,—Sir James Dundas-Grant has done well to draw attention again (October 29th, p. 804) to the frequent association of nasal disease with asthma, and to insist on the benefit which often results from the cure of the nasal affection. It is not, however, with obvious nasal disease that the omission of a rhinoscopic examination is likely to occur, but rather with those cases of nasal accessory sinus suppuration which have been termed latent, and especially of antral suppuration. There is no nasal affection the cure of which has such beneficial effects on asthma as this. Indeed, one

has come to look upon the association of antral disease with asthma as fortunate for the patient, in that its cure is followed in most cases by great benefit to the asthmatic and frequently by disappearance of the attacks.

The relationship of the two affections is a matter for more extended discussion than is possible in a letter. Antral disease is by no means always, nor indeed in most instances, obvious. It must be looked for, and the only definite method of diagnosis is by examination of the contents of the cavity. *X*-ray examination and trans-illumination are not definite, and it is because this is not sufficiently recognized that so many cases are overlooked. What is more, too—and this is of special significance in regard to asthma—antral disease is much more common in children than is generally supposed. The signs and symptoms are masked by the presence of adenoids.—I am, etc.,

Glasgow, Oct. 30th. W. S. SYME.

THERAPEUTIC ABORTION.

SIR,—Of late a new and disturbing medical term has made its appearance in increasing prominence in the columns of the JOURNAL—namely, "therapeutic abortion." May I, a humble general practitioner, inquire the meaning of the term? Is it used to describe the failures of the obstetric art, or is it used to cloak the criminal abortions, as I consider them, induced by those leaders of the profession who profess to see in the desire of well-to-do couples to avoid parenthood sufficient mental upset to justify the destruction of an unborn, but living and viable, human being?

I submit that the use of the term is unmoral and scientifically unjustifiable. It is degrading to our ancient art, and it can but lead to a lowering of our professional status in the eyes of the public to see in the columns of the leading medical journal of the world discussions as to when the slaughter of an unborn child may be carried out. Abortion is never justified, even when carried out at the behest of a governing power, as in Russia at the present day. I venture to predict that the increasing laxity in our regard of the sacredness of human life will, if unchecked, lead in time to discussions under the head of "therapeutic homicide!"

I have waited for those of greater standing than myself in the profession to tackle this matter, but in vain. Perhaps it is fitting that the general practitioner should come forward to protect family life.—I am, etc.,

London, N.W.5, Oct. 10th. P. P. DALTON.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE Vice-Chancellor announces that Sir Archibald Garrod, K.C.M.G., M.D., F.R.S., has tendered to the Prime Minister his resignation of the office of Regius Professor of Medicine, which he has held since 1920. The resignation will take effect as from December 31st, 1927.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on October 28th the following medical degrees were conferred:

M.D.—C. E. Newman.
M.B., B.CHIR.—G. B. W. Walker, G. A. Q. Lennane.
B.CHIR.—E. H. A. Walker.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary quarterly comitia of the Royal College of Physicians of London was held on October 27th, when the President, Sir John Rose Bradford, was in the chair.

Membership.

The following candidates, having satisfied the Censors' Board, were admitted to the Membership:

I. McD. Allen, M.D.Otago, Doris M. Baker, M.D.Lond., L.R.C.P., D. Davidson, M.D.Lond., L.R.C.P., H. V. Dicks, M.B.Camb., L.R.C.P., A. Erian, L.R.C.P., N. T. Glynn, M.B.Camb., L.R.C.P., W. G. C. Godbehear, M.B.Melb., J. G. E. Hayden, M.D.Melb., Major E. H. V. Hodge, I.M.S., M.B.Camb., L.R.C.P., E. C. Seward, M.B.Lond., L.R.C.P., G. E. F. Sutton, M.B.Lond., L.R.C.P., J. M. Twhigg, M.B.New Zeal., L. F. H. Whitby, *M.C.*, M.D.Camb., L.R.C.P., M. L. Young, M.B.Camb., L.R.C.P.

Licences.

Licences to practise were granted to the following 175 candidates who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Examining Board in England:

*Mary E. A. Allen, F. W. Allinson, S. W. Allinson, J. V. Almeyda, *Joan Anderson, B. J. E. Anson, C. Arkles, M. I. Ashmawi, P. V. Bamford, O. A. Beadle, W. J. H. M. Beattie, C. A. Bence, F. W. Bewley, H. R. P. Boucaut, A. R. Bowtell, W. V. Boyle, W. E. R. Branch, D. H. Brinton, *Ruth M. Brittan, L. Brown, J. R. Buchanan, E. S. Caley, C. S. Carter, B. W. Cartwright, A. J. W. Chamings, W. A. Clark, E. Clayton-Jones, *Amy G. Clegg, M. Coleman, M. Coll, N. B. Colman, A. W. Cubitt, E. G. C. Darke, *Ethel G. Davies, S. B. Davis, R. de Souza, P. M. Deville, W. E. Dornan, C. H. Egan, *Antoinette H. P. Ellis, D. Ellis, S. Farfel, C. J. Farr, H. G. Foyd, *Helen M. G. Foster, J. L. Franklin, L. W. Freeman, C. R. E. Freezer, T. O. Garland, S. Gifford, *Edith Giles, G. G. Gillam, *Barbara M. L. Glover, P. S. Goonewardene, E. L. Graff, A. W. T. Green, F. Grundy, *Brenda G. Hallett, A. S. Hatch, W. J. Heely, R. A. Hill, L. T. Hilliard, W. A. C. Hortor, *Esther M. Hoskin, G. MacI. Housden, *Lilian J. Hubble, E. C. H. Huddy, E. H. Hudson, W. F. Hudson, T. I. Hughes, F. H. Hunnard, W. A. Hutton, S. Indersen, G. L. M. Inkster, E. D. Irvine, E. T. James, T. E. James, B. R. M. Johnson, R. E. Jones, D. F. Kanaar, C. A. Keeble, W. R. Keizer, *Rachel I. Kessel, H. A. Kidd, K. Knowles, E. Landau, L. E. Lane, I. W. Lazarus, J. T. Lewis, M. J. Liberson, A. W. Lilley, *Edith G. Limmex, F. E. Lipscomb, D. H. Lloyd, J. Lloyd, A. Long, P. H. Loretz, W. S. McConnell, A. M. McMaster, H. I. Maister, H. E. Mansell, *Beryl L. Mappin, W. H. Miller, W. Milligan, D. P. Mitra, R. V. Mone, A. M. A. Moore, P. H. L. Moore, D. T. R. Morris, T. C. Mort, T. Morton, *Gertrude M. Nicholson, W. A. Nicholson, A. T. Pagan, W. R. S. Panckridge, M. D. Patel, M. N. Patel, A. Peacock, J. R. Peacock, G. M. Phadke, L. M. J. A. Pilot, G. W. Pimblett, D. Preiskel, W. J. E. Radford, P. R. Rainey, B. D. Rawlin, B. R. R. L. Reddy, W. G. Rees, W. V. Roache, I. M. Robertson, R. Roderick, R. Rose, *Mona M. Russell-Cruise, A. de la C. Russman, P. G. Salt, J. I. Sapwell, R. Saran, S. Scheinfein, T. G. Scott, H. Shenouda, V. C. Shroff, *Catherine E. M. Siddall, E. J. Silverman, T. E. N. Simpson, M. R. Sinclair, E. T. O. Slater, F. Smith, F. Smith, G. H. A. Soysa, E. T. C. Spooner, *Joan Staddon, R. J. Steeds, T. R. Stevens, D. W. Stuart, J. H. R. Thomas, L. G. Thomas, *Doris H. Tomes, *Sybil E. Tremellen, S. L. Tunnicliffe, L. P. Tupling, H. L. Vaidya, *Isabel Vallance, J. H. Wainwright, *Nora W. Wamsley, A. J. Watson, J. R. S. Webb, W. A. S. Welsh, A. R. N. Whitlow, P. C. Wickremesinghe, J. W. Wigg, W. J. Wilkin, G. H. J. Williams, S. T. Williamson, W. A. Wood, E. C. Wynne-Edwards.

* Under the Medical Act, 1876.

Appointments.

On the nomination of the Council, Dr. Robert Arthur Young, C.B.E., Dr. Joseph Shaw Bolton, Dr. Grafton Elliot Smith, and Sir Percy William Bassett-Smith, K.C.B., C.M.G., were elected Councillors to take the places of Dr. A. G. Phear, Sir StClair Thomson, Dr. Bedford Pierce, and Sir Leonard Rogers.

Sir Francis Champneys was re-elected a representative of the College on the Central Midwives Board.

Dr. R. A. Young was reappointed a member of the Committee of Management.

Lectures.

The President announced the appointment of Dr. A. G. Gibson to the Bradshaw Lectureship for 1928, and of Dr. J. Graham Forbes to the Milroy Lectureship for 1929.

Prizes.

The President announced the award of the Jenks Memorial Scholarship for 1927 to James Ramsay Muirhead Martin, formerly of Epsom College.

The President announced that the Gilbert Blane Gold Medal had been awarded to Commander A. W. McKorie, M.B., R.N., and the Weber-Parkes Prize to Dr. A. Stanley Griffith of Cambridge.

Appointment of Representatives.

Sir E. Farquhar Buzzard, Senior Censor, was appointed to represent the College at the centenary celebration in June, 1928, of the incorporation of the Institution of Civil Engineers by Royal Charter.

The President was appointed to represent the College on the Organizing Committee of the International Congress of Military Medicine and Pharmacy, to be held in London on May 6th to 11th, 1929.

Resignation of Fellowship.

The resignation of the Fellowship by Dr. J. G. Taylor (Chester) was accepted with regret.

Diploma in Obstetrics.

A communication was received from the Society of Apothecaries stating that the Society had decided to institute a Diploma in Obstetrics.

Diploma in Pathology.

A communication from the British Pathologists' Association suggesting the desirability of instituting a special Diploma in Pathology was referred to a committee for consideration.

Committee of Management.

The Committee of Management recommended that the following universities be added to the list of institutions where graduates in medicine are admissible to the Final Examination in Medicine, Surgery, and Midwifery under the conditions, paragraph iv, Section III, of the old regulations, and paragraph iii, Chapter III, of the regulations dated January 1st, 1923: *Germany*, University of Cologne; *Spain*, University of Barcelona; *Memphis*, University of Tennessee College of Medicine.

The Committee reported that in accordance with the conditions laid down in April, 1920, by the Royal Colleges, they had recognized courses of instruction for D.P.H. in the following institutions: Haffkine Institute, Parel, Bombay; London School of Hygiene

and Tropical Medicine (the five months' course recognized for the course of parasitology only); University of Lucknow.

The Committee also reported the retirement of Dr. R. A. Young, C.B.E., and Mr. F. J. Steward from the Committee under the conditions of paragraph vi, Part I, of the scheme for constituting the Examining Board in England.

Miscellaneous.

A letter was read from Mr. F. G. Hallett expressing his appreciation of the action of the College on his retirement from the office of Secretary to the Conjoint Board.

Communications from the Royal College of Surgeons reporting the proceedings of the Council of that College were received.

After some formal College business had been transacted, the President dissolved the comitia.

Obituary.

Dr. Frederick John William Cox, who died on October 7th, at his residence in Bowdon, Cheshire, in his 70th year, was the son of the late Dr. Cox of Innerleithen. He received his medical education at Edinburgh, where he obtained the diplomas L.R.C.P., L.R.C.S. in 1880, and graduated M.B. in the following year; he proceeded M.D. in 1893. After practising at Eccles for some years with his brother he went to Bowdon in 1897. He held the appointments of senior surgeon to the Manchester Ear Hospital, and consulting aural surgeon to the Buxton Cottage Hospital, the Altrincham General Hospital, and the Manchester Warehousemen and Clerks' Association. Dr. Cox was a member of the Edinburgh Royal Medical Society and the Manchester Medical, Pathological, and Clinical Society. He took an active interest in the British Medical Association, and in 1902 was vice-president of the Section of Otology at the Annual Meeting at Manchester. He was a member of the executive committee of the Altrincham Division in 1904 and 1910; vice-chairman of the Division from 1907 to 1908, and chairman in 1909. He was also a member of the executive committee of the Mid-Cheshire Division in 1915.

Dr. Henry William Evans, who died on October 25th, at the age of 37, received his medical education at Guy's Hospital, and obtained the diplomas M.R.C.S., L.R.C.P. in 1913; in the following year he graduated M.B., B.S.Lond., and proceeded M.D. in 1920. At the outbreak of war he received a commission in the R.A.M.C. and went to France in 1915. While on the Somme he was isolated with his ambulance company for two days; he continued his work under extremely difficult conditions until relief came, and for this he was awarded the Military Cross. He was invalided home in 1917, but went out to Egypt and Palestine in 1918, and took part in Allenby's capture of Jerusalem, where he remained until December of the following year. He returned to Guy's Hospital in 1920, and was appointed resident obstetrician to Mr. Bellingham Smith. In 1921 he married and settled at Reedham in Norfolk, becoming eventually a partner with Dr. Eliot Blake; he removed to Brundall in 1923. Throughout his life he took great interest in sport, and at Bedford Modern School he was in the first rowing four, a member of the first fifteen, and won the school cup for running. On leaving school he played for the East Midlands fifteen, and at Guy's Hospital joined the Artists' Volunteer Corps and won the Territorial championship for running. He was chosen to represent the British Isles at the Stockholm Olympic Games, but was unable to spare the time for this. A colleague writes: It is difficult to express in words the rare qualities which Henry Evans possessed. In his work he was not only brilliant, he was essentially sound. He was a man of wide interests, and took even more pleasure in literature than in sport, in which he excelled. He was gifted with sympathy tempered by a keen sense of humour, and with emotions controlled by sound judgement. He was deeply loved by all who knew him, and won the affection and confidence of his many patients, rich and poor alike. He leaves a widow with two young children.

Medical News.

Under the auspices of the Health Organization of the League of Nations an international continuation course in public health commenced at the house of the Society of Medical Officers of Health, 1, Upper Montague Street, W.C.1, on November 3rd, and will continue until December 15th. The opening address is being delivered to-day (Friday, November 4th) by Sir George Newman, on the development of public health administration and practice in England. The lecturers include: Dr. Foramitti, deputy director of the Federal Public Health Services, Austria; Colonel L. W. Harrison; Professor B. Nocht of Hamburg; Dr. F. J. H. Coutts; Sir Henry Gauvain; Dr. F. E. Fremantle, M.P.; Professor G. Y. Giglioli, lecturer on industrial hygiene, Florence; Dr. A. W. J. MacFadden; Dr. Charles Porter; Professor F. Neufeld of Berlin; Professor C. Pirquet of Vienna; and Dr. W. M. Willoughby. A few tickets for the course are available for medical officers of health, and may be obtained from the executive secretary, 1, Upper Montague Street, W.C.1.

Sir StClair Thomson will deliver a lecture for the Fellowship of Medicine on bleeding from the nose and throat at the Medical Society, 11, Chandos Street, Cavendish Square, on November 7th, at 5 p.m. There will be demonstrations on November 9th by Mr. Greeves at the Royal London Ophthalmic Hospital at midday, and by Sir William Willcox at St. Mary's Hospital at 3 p.m.; another demonstration will be given at the Cancer Hospital on November 10th, at 3 p.m., by Mr. Cecil Rowntree. The lecture and the demonstrations are free to medical practitioners. From November 14th to 26th St. Peter's Hospital will hold a special course consisting of clinical instruction, cystoscopies, and lectures on diseases of the urinary tract. A three weeks' course in medicine, surgery, and gynaecology, occupying the mornings and some afternoons, will begin on November 14th at the Royal Waterloo Hospital. A series of clinical demonstrations upon selected cases will be given daily at the West End Hospital for Nervous Diseases, at 5 p.m., from November 21st until December 17th. A special course for the general practitioner will be held at the London Temperance Hospital from November 21st to December 3rd, at 4.30 to 6 p.m. every afternoon. At St. Mark's Hospital there will be a week's special course in proctology from November 28th to December 3rd. Copies of syllabuses and of the *Post-Graduate Medical Journal* may be obtained from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

The annual address arranged by the medical staff of the Central London Throat, Nose, and Ear Hospital, Gray's Inn Road, W.C., will be given on Friday next, November 11th, at 4 o'clock, by Mr. Ernest B. Waggett. The title of the address is "On Observation."

At the next meeting of the Optical Society to be held at the Imperial College of Science on Thursday, November 10th, at 7.30 p.m., a communication on the resolution of gratings by the astigmatic eye will be made by Messrs. J. R. Hamblin and T. H. Winser, and Mr. O. Aves will discuss the deviograph and trial frame.

The Medical Officers of Schools Association will hold a general meeting at the house of the Medical Society of London (11, Chandos Street, Cavendish Square, W.1) on Friday next, at 5 p.m., when Mr. W. Rowley Bristow, F.R.C.S., orthopaedic surgeon to St. Thomas's Hospital, will read a paper on the commoner disabilities of bones and joints in adolescence.

Four lectures on insanity and the history of its treatment will be given by Sir Robert Armstrong-Jones, C.B.E., M.D., at Gresham College, Basinghall Street, London, E.C.2, on November 7th, 8th, 10th, and 11th; the first will deal with the nature of insanity, the second will be an historical survey, and in the third the report of the Royal Commission will be discussed. The last lecture will be illustrated by lantern slides of old and new treatment. The lectures will be given at 6 p.m. on each day and are open free to all.

The annual dinner of the Royal Society of Medicine will be held at the Hotel Victoria, Northumberland Avenue, W.C.2, on Wednesday, November 16th, at 7.30 for 8 p.m.; Lord Darling is to be the society's guest of honour.

The fifty-first anniversary dinner of the Cambridge Graduates' Club of St. Bartholomew's Hospital will take place on Wednesday, November 23rd, at 7.30 p.m., at the Hotel Victoria (Oak Room), with Dr. John Barris in the chair. The honorary secretaries are Dr. Henry Burronghes and Mr. Reginald Vick. Price of dinner 12s. 6d., exclusive of wines.

THE Sheffield medical dinner will be held at the Grand Hotel, Sheffield, on Thursday, November 10th, at 7.45 p.m., when Professor A. J. Hall will preside. Professor H. R. Dean of Cambridge will respond to the toast of "The Medical Profession." There will be musical items during the evening. Applications for tickets (12s. 6d., exclusive of wines) should be made by November 8th to the honorary secretary, Dr. Pleasance, 2, Oriel Road, Fulwood, Sheffield.

THE annual dinner of the Reunion Association of the Prince of Wales's Hospital, Tottenham, N., will be held at the Trocadero Restaurant, Piccadilly Circus, W., on Friday, November 11th, at 8.15 p.m. The chair will be occupied by Mr. Edward Gillespie. The price of the dinner will be 12s. 6d. (exclusive of wines) for members and their guests. The secretary is Dr. J. Browning Alexander, 42, Harley Street, W.1.

THE annual dinner of the Society of Medical Officers of Health will take place at the Piccadilly Hotel, London, W., on Thursday, November 17th. The president, Dr. James Wheatley, will take the chair at 7.30 p.m. The society has arranged to hold five general discussions during the present session. On November 18th the subject for discussion will be health aspects of the Factories Bill; on December 16th, health aspects of the Poor Law reform proposals; on January 20th, recent advances in the knowledge of food; and on February 17th, the control of small-pox. These meetings will all be held at 5 o'clock at the house of the society, 1, Upper Montague Street, Russell Square, W.C. On April 20th the society will meet at Bath, and a discussion will take place at 3 o'clock on the causes of the decline in tuberculosis mortality, the first of the four opening speakers being Sir Robert Philip, President of the British Medical Association.

THE medical staff of the Royal Dental Hospital, Leicester Square, W.C., will be at home on Saturday afternoon, November 26th, when the hospital will be open for inspection and cases of interest shown. The dinner of past and present students of the hospital will take place the same evening at the Trocadero Restaurant, Shaftesbury Avenue, at 7 o'clock, under the presidency of Mr. J. S. Amoore.

DR. C. S. MYERS, F.R.S., will take the chair at a discussion organized by the British Institute of Philosophical Studies, when the question whether the new psychology is a department of education or of medicine will be opened by Dr. H. Crichton Miller and Mr. Kenneth Richmond. It will take place on Tuesday next, at 8.15 p.m., at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2.

THE third annual Norman Lockyer Lecture of the British Science Guild will be given by Dean Inge on Monday, November 21st, at 4 p.m., in the Goldsmiths' Hall, Foster Lane, E.C., when the president of the Guild, the Right Hon. Sir Alfred Mond, Bt., M.P., will be in the chair. The subject of the lecture will be scientific ethics. Admission is free, and tickets may be obtained from the secretary of the Guild, 6, John Street, Adelphi, W.C.2.

THE educative value of E. F. Harrison's work in pharmacy will be the subject of an address given by Mr. E. Saville Peck, M.A., at the first evening meeting of the Pharmaceutical Society of Great Britain, which will take place on Tuesday next, at 8 p.m. Afterwards Harrison lectureship medals will be presented to the lecturer and to Mr. F. H. Carr, C.B.E., F.I.C. It will be remembered that Harrison was for many years pharmaceutical adviser to the BRITISH MEDICAL JOURNAL, and wrote the books *Secret Remedies* and *More Secret Remedies*.

SIR JOHN ROBERTSON, who recently retired from the office of medical officer of health for Birmingham, has been presented by the principal officers of the Birmingham Corporation with a set of old English cut glass ware. He was also presented, at a meeting of past and present members of the Birmingham Public Health Committee, on October 28th, with a silver tea service, a copy of Groves's *Dictionary of Music and Musicians*, and an illuminated engrossment of the resolution adopted by the Health Committee on September 23rd.

DR. CHARLES EDWARDS, J.P., of Andover, has accepted the invitation of the Aldermanic Committee to be nominated as mayor. At his election to the council three years ago he headed the poll, and his work on it has won general approbation. Dr. Edwards received his medical education at Guy's Hospital, and in 1900 obtained the diplomas of M.R.C.S., L.R.C.P.; he graduated M.D.Durham in 1920. He is surgeon to the Andover Hospital, and is an honorary life member of the St. John Ambulance Association. He is a representative of the Winchester Division on the Southern Branch Council of the British Medical Association.

DR. JOSEPH PRIESTLEY, who, as already announced, is retiring from the post of medical officer of health for Lambeth after thirty-two years' service, has been presented by the local members of the medical profession with an inscribed silver salver. In making the presentation at a meeting at the Lambeth Town Hall on October 27th, the mayor, Dr. R. S. Pearson, said that Dr. Priestley, during his term of office, had succeeded in making Lambeth one of the healthiest boroughs of the kingdom. The other speakers included Dr. F. N. Kay Menzies, Dr. Harvey Norton, and Dr. M. G. Fenton.

DR. E. A. GREGG, J.P., ex-Mayor of St. Pancras, has been presented by his colleagues on the borough council with his portrait, while Mrs. Gregg was the recipient of a small motor car. In making the presentation Alderman Collins acknowledged the strict impartiality with which Alderman Gregg had carried out his duties whilst mayor, and had proved himself to be a man of outstanding personality.

DR. GEORGE ROBERT BRUCE (M.O.H. Hastings) has been elected a Fellow of the Royal Sanitary Institute.

THE anonymous donor who gave £750 in response to the Lord Mayor's appeal at the opening ceremony of the New Wing of St. Mark's Hospital, City Road, on October 26th, to complete the sum of £3,000, which is the estimated cost of the building, was Mr. H. Clifford-Turner. This is Mr. Clifford-Turner's third generous donation to the funds of this hospital.

THE Catisfield House convalescent home at Brighton is established on a small estate bequeathed for the purpose by Miss Rose Greene. It is intended for gentlewomen of limited means, especially those leaving hospital after an operation or acute illness, so as to give them an opportunity of completing their convalescence before resuming their active duties in life; it is open to persons of all religious denominations. It can accommodate seven patients, and is conducted on the lines of a first-rate nursing home, with as few rules as possible, so that the inmates may feel at home. As the endowment is not sufficiently large to pay the whole upkeep a charge of 30s. to £2 a week is made, but medical attendance when necessary, and medicine, are provided free of charge. The institution is managed by a committee, which meets weekly, and we are indebted to Dr. C. Percival White, a member of the House Committee, for these particulars. There is a resident trained matron and nurse. Persons merely requiring a holiday, and cases of phthisis, acute cancer, infectious diseases, mental trouble, and the drug habit, are not admitted. The home has been open for two years, but it appears to be insufficiently known, as the number of applications received is not sufficient to keep it always full. Information can be obtained from the Matron, Catisfield House, Sillwood Road, Brighton.

THE ninth annual report of the Besford Court Catholic Mental Welfare Hospital for Children for the year 1926–27 has just been issued. It has a prefatory note by the Archbishop of Birmingham, and contains an interesting account of the methods and aims of this institution written by the administrator and superintendent, the Rt. Rev. Monsignor Newsome, who discusses the mental deficiency problem in the light of Roman Catholic philosophy. The hospital is situated at Defford, near Worcester; it was first opened for the reception of patients on October 1st, 1917. The report is fully illustrated, and contains an appendix from the research department describing an investigation into the correlations of "mental ages" with manual, social, and industrial abilities.

THE eighth annual report of the Walter and Eliza Hall Institute of Research in Pathology and Medicine at Melbourne covers the year ending June 30th, 1927, during which a book on hydatid disease has been completed for publication, and a study of pancreatic regeneration concluded. Further work on streptococcal strains is in progress, and a preliminary study has been made of the organisms concerned in puerperal sepsis. An experimental investigation has been continued with a view to determining whether there is any relation between cancer and tuberculosis. Other subjects under consideration include the pathological histology of the dental tissues, the mechanism of compensatory renal hypertrophy, and sarcoma of the testis.

AN attractive advertisement of Egypt and the Sudan has been issued by the Tourist Development Association of Egypt. The cover of the book shows a design from one of the panels in the vaulted chamber erected by Thoutmosis III to the goddess Hathor. The book contains a series of articles on the sights, scenery, and mystery of Egypt, which are interesting and readable. It is profusely illustrated with photographs, and should be quite useful in furthering the objects of the association. The book is obtainable from Messrs. Sells, Ltd., 168 and 167, Fleet Street, E.C.4.

PROFESSOR EMIL ABDERHALDEN of Halle and Professor Max Nonne of Hamburg have been nominated honorary members of the Royal Academy of Medicine at Rome.

DR. PAUL LEJEUNE of Liège has been nominated president of the Belgian society of oto-rhino-laryngology.

THE State vaccination institute of Berlin has recently celebrated the 125th anniversary of its foundation.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the BRITISH MEDICAL JOURNAL are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediocera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS.

"OBSTRUCTION," who contemplates having a colostomy performed, would like to have the experiences of some medical man who has undergone this operation, especially as to the amount of disagreeableness thereby entailed and the amount of time spent daily in dressing the wound. Is the mental picture that every medical man has of this condition an exaggerated one?

SPA TREATMENT.

"R. P. S." asks for information about the baths at Jura in Peru, said to be efficacious in gout.

SURGEON CAPTAIN E. H. MEADEN, R.N.(ret.), asks for advice in the choice of a spa for the treatment of chronic articular rheumatism and fibrosis, with a certain degree of arterio-sclerosis. He has thought of Droitwich or Bath.

BORING THE LOBULE.

DR. JAMES BROWN (Stirchley, Birmingham) sends us a sketch (reproduced herewith) of an instrument which is used by jewellers to puncture the lobule of the ear. A is a trocar and cannula, B is a trigger, C a pull-back to set the apparatus, and D a hinge; when set, the trocar and cannula are withdrawn into the tube E. "I have used this instrument several times," Dr. Brown adds; "the 'operation' can be done quickly and accurately and is practically painless. The cost of the instrument is about 10s. 6d.; it can be obtained from the Wilmot Manufacturing Company, Camden Street, Birmingham."

STOMACH COUGH.

"M.B.CANTAB." asks for help in self-treatment. He has suffered for years from persistent night cough, the performance being always the same, waking from 1 to 2 a.m.—that is, roughly five hours after last meal—with violent irritation in the throat, coughing incessantly for about half an hour or more until flatus forms in the stomach and can be expelled, when the irritation ceases and rest can be resumed. Condition diagnosed by physician as nervous hyperchlorhydria, but treatment by dieting and various stomach mixtures has been unsuccessful. Bromides occasionally relieve, but are undependable. Alkalis taken at the time shorten the attack and hasten expulsion of flatus, but taken at bedtime seem powerless to ward off the attacks, which have persisted for some ten years. Teeth good, throat normal, general health good, and no conscious indigestion by day.

INCOME TAX.

Free Quarters.

"P. E. A." holds an appointment as assistant medical officer to a convalescent home at a salary *plus* free quarters and board in the home. Are his free quarters assessable to income tax?

*** It seems that the authorities recognize that the home is entitled to exemption from assessment, Schedule A, but there is a statutory qualification to such exemptions—"so far as not occupied by any individual officer . . . whose total annual income . . . amounts to £150." Although "P. E. A." has the free use of the rooms the statutory occupier of the premises as a whole is the authority administering the home, and the retaining of the value of the quarters as liable to tax should therefore be by way of a restriction of the exemption granted to the authority—in other words, the tax is payable, but by the treasurer rather than by our correspondent.

Cash Basis.

"A. W. S. C." has been assessed for the past twenty years on a cash receipt basis. He has now been asked, through the agent by whom his returns are lodged, to revise his figures so as to put them on the basis of "fees earned." For various reasons this would prove very troublesome.

*** Unless the practice is expanding there would apparently be no ground for believing that a revision to the *value* of fees earned would effect any material change over a period of years, and in such circumstances it is understood that inspectors of taxes do not press for the change to be made. We suggest that our correspondent should communicate with the inspector—or preferably see him if practicable—and explain the particular difficulties in meeting his request, including that of the specific valuation of outstanding debts, and endeavour to show him that compliance is unnecessary. Theoretically the inspector is right, but on the assumption made above his request is not in accordance with the normal practice, and would not, we believe, be supported on appeal to the Commissioners appointed to hear appeals against assessments. In any case insistence on the request would have to be backed by a previous amendment of the existing assessment, which apparently agrees with the cash basis return.

LETTERS, NOTES, ETC.

THE REGISTRATION OF NURSING HOMES.

MISS L. RAMSDEN, President of the Incorporated Midwives' Institute, writes: We feel that your readers are not sufficiently aware of the dangerous provisions that have been inserted in the Nursing Homes (Registration) Bill. These place the duty of inspecting nursing and maternity homes in the hands of the smaller local authorities (in many cases the rural or district councils) and propose the repeal of Part II of the Midwives and Maternity Homes Act, 1926. This Act, which has been working satisfactorily since passed, placed the inspection of maternity homes under the same authority as the midwives—the county councils and the county borough councils. If the new bill, as amended, is passed, the result will be: dual inspection, the home being under one authority and the midwives working in it under another, with conflicting rules and regulations; the possibility, so undesirable in administrative work, of the influence of personal friends and vested interests; and the certainty that the smaller authorities would not be able to provide well trained, whole-time inspectors with expert knowledge.

MENSTRUAL "UNCLEANLINESS."

COLONEL P. BROOME GILES (Folkestone) writes: Whilst I do not believe that the usual brief handling of food by a menstruating woman will decompose the food, I know by actual experience that the prolonged contact between the hands of a menstruating woman in the process of rubbing salt, etc., for the preservation of hams will produce a decomposition and render the hams uneatable. This fact is well known to the farmers' wives in Herefordshire, Radnorshire, and Breconshire.

SOY BEAN SEEDS AS CULTURE MEDIUM.

MAJOR H. ST. ARNAUD AGATE (Salisbury) writes: In the BRITISH MEDICAL JOURNAL of October 22nd (*Epitome*, para. 379) there appears an extract from the *Rassegna int. di clin. e ter.* of August 31st, under the heading of "Soy bean seeds as culture medium," by L. Vitale. I should like to point out that in an original communication entitled "The standardization of a base culture medium," published in the *Journal of the R.A.M.C.*, dated March, 1922, I mentioned soy beans as being among the substances used in the preparation of culture medium. I still use it, with the addition of 0.5 per cent. of marmite. I have done this for about eight years, with uniformly satisfactory results. I can, therefore, confirm L. Vitale's experience.

A CORRECTED PRICE.

THE price of *The Invert and His Social Adjustment*, which was reviewed last week, is, we are informed, 5s., and not 3s. 6d.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 50, 51, 52, 53, 56, and 58 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 187.